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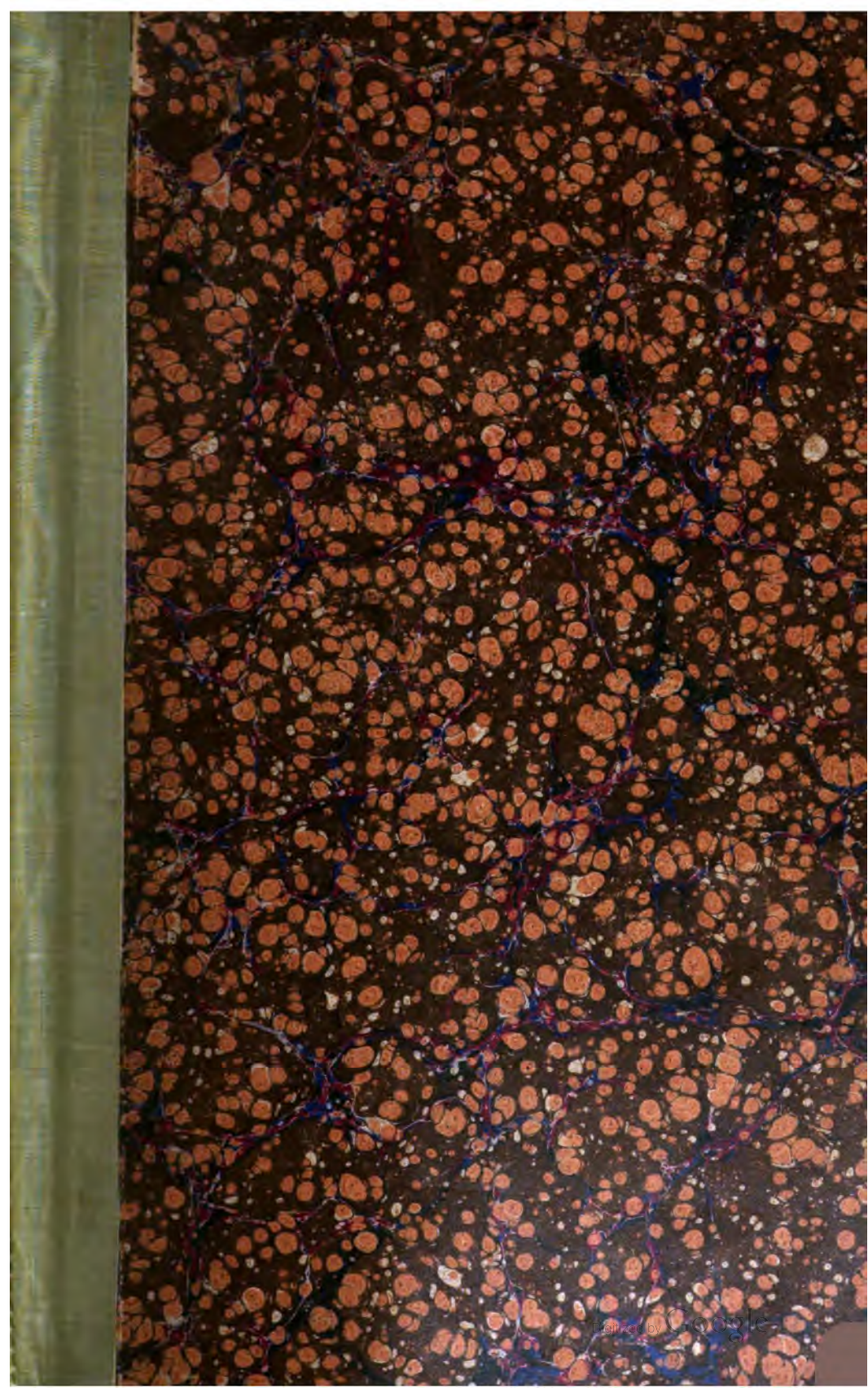
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THE
PEDAGOGICAL
SEMINARY.

A QUARTERLY

INTERNATIONAL RECORD OF EDUCATIONAL LITERATURE,
INSTITUTIONS AND PROGRESS.

EDITED BY

G. STANLEY HALL,

President of Clark University and Professor of Psychology and Education.

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THE PEDAGOGICAL SEMINARY.

Founded and Edited by G. STANLEY HALL.

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No. 1.

EDITORIAL.

The present number, which begins the fifth volume, marks an important new departure in the PEDAGOGICAL SEMINARY. Hitherto three numbers have constituted a volume; henceforth it becomes a quarterly, and is to be issued regularly instead of irregularly as before.

In the first article (56 pages) Mr. Street seeks to describe certain factors of Moral Education as viewed from the children's standpoint, and treats self-denial, conscience cases, teachers' influence, religion, influence of playmates, parents, games, reading, etc. A large collection of proverbs actually in vogue are given, with the suggestion that they should form a large part of the copy in school writing books. The article throws new light upon many of the most important problems of moral and religious life and culture.

The next article, by Messrs. Lindley and Partridge, on Some Mental Automatism (20 pages), in a sense supplements an article by Mr. Lindley on Some Motor Phenomena of Mental Effort, in the *American Journal of Psychology*, July, 1896. The groups studied here are Avoiding, as stepping on cracks in the sidewalk or certain carpet figures; Counting, as trees, jets of gas, stairs, ticks of clock, etc.; Grouping, as into squares, diamonds, circles, etc., and Bisecting.

The explanation of these interesting and very prevalent phenomena is original and suggestive. So far as known this is the first attempt to study them in normal people.

In the third and longest article (68 pages) Mr. Lancaster undertakes a comprehensive survey of the entire subject of Adolescence, its Psychology and Pedagogy. After a concise digest of previous literature upon the subject, he passes to the results of one of the most comprehensive of all the studies yet made here by the questionnaire method. Like most of the forty child-study articles already published here, and indeed more so, this abounds in statistics, and samples many typical cases. Some of the conclusions are quite new and at variance with current opinion and practice. On the whole, this article is one the most important and interesting yet printed in the SEMINARY.

Miss Mary Louch, of the faculty of Cheltenham (Eng.) Ladies' College, prints a digest of a longer, but as yet unpublished study of the Difference Between Children and Grown-up People, from the Child's Point of View.

Miss H. A. Marsh, of Detroit, describes her method of organizing conferences between parents and teachers, and the interesting results attained.

Dr. H. T. Lukens prints a brief sketch of the life and works of Dörpfeld. The latter are now published, 12 volumes, and Dr. Lukens, who knew the author, has here condensed the main conclusions of a brief course of lectures upon his system—which he has given during the past academic year at Clark, Bryn Mawr, and Haverford.

Many brief book notes, mostly by the editor, close the number, which, on the whole, is believed to be one of the best and most varied, as it certainly is one of the largest, of all that have appeared.

A STUDY IN MORAL EDUCATION.

By J. R. STREET, Fellow in Clark University.

With the view of approaching this question from the side of introspection, and thereby discovering a psychological basis for the investigation of the laws that underlie the higher development of the moral nature, Syllabus No. 5, 1895-96, was issued by Dr. G. Stanley Hall.

The replies received are chiefly from Miss Williams, of the New Jersey State Normal, from the Farmington (Maine) Normal, and from Miss Mary Goddard, of Worcester, Mass. There are also a number of individual replies from various parts of the country. Thanks are due all these for the high character of the papers and for their kindness in answering.

It is regrettable that so few replies have been received from young men, there being but 23 in all. This prevents the possibility of making any satisfactory comparative study of the sexes. One valuable characteristic of the returns is that nearly all of them are from persons of 17-21 years of age, not yet old enough to have forgotten the forces that have combined to make them what they are, and still too youthful to have obscured them with the philosophy that the more extended experiences of life produce.

In presenting the results, as far as possible the boys and girls will be allowed to tell their own story, yet the necessity for brevity demands that these results be shown in tabular form. It is hoped, therefore, that the figures will present the quantitative results, and the condensations will be relied upon to present the qualitative.

The sections of the syllabus are quoted at the beginning of each division of the subject.

The replies to the first five sections were of such a general nature, that no particular advantage would be gained by reproducing them, therefore only the results culled therefrom are presented.

I. What punishments or rewards have you ever had that did you good or harm? State the case and its results.

Of the 183 persons reporting, 104 give instances of punishment, 66 speak of being benefited, and 38 as being injured by the punishment.

The punishments that did good, were :

Whipping 16. Withdrawal of privileges 11. Plain talks given privately 6. Scolding 4. Sent to a room alone 5. Made to apologize 3. Sent to bed 3. Mouth washed out with soap, salt and pepper 2. Withdrawal of favor 2. Standing on platform in school 2. Made to repeat an offence before the school 2. Kept in after school 1. Sent to bed supperless 1. Publicly rebuked 1. The form of a terrible whipping without the substance 1. Talked to 1. Simply forgiven 1.

Punishments that were injurious :

Whippings 8. Unmerited punishments 8. Public punishments 2. Sarcastic reproof 4. Impositions 4. Forced apology 3. Standing on school platform 2. Public reproof 1. Public scolding 1. Seated with opposite sex 1. Whipping for inability 1. Seated alone. Withdrawal of school privileges 1. Slapping on face 1. Sent to bed 1. Kept in after school 1.

Rewards were reported by 27. Of this number 11 spoke favorably, while 16 related instances of evil tendencies.

The strongest that can be said in favor of rewards is, that, in some instances, habits of industry and studiousness were established, while against this are opposed the facts, that they give a false motive, and therefore fail in developing true student ideals ; that they are a source of constant strife and bitterness of feeling among pupils and even among parents ; and that their efforts generally are most unhygienic.

All that can be said in regard to punishment is, that, as far as possible, it should be retributive and not vindictive, as the latter but stirs up the child's evil nature and always fails as a corrective measure. As has been so admirably pointed out by Spencer, arbitrary punishments are but means the parent, or teacher employs to smooth his own ruffled feelings, a safety valve through which the over-pressure of angry passion is permitted to escape. *The child's disposition should be the determining factor*, and as far as possible the punishment should follow as a natural consequence (cause and effect) of the misdeed.

SELF-DENIAL, ETC.

Sec. II. Think over cases of special self-denial, or self-control, or effort you have put forth to be and do good. Also your special lapses, and see if you can account for the determining element in each. Write as intimately and confidentially as you can of your besetting fault or even vices. What is good and bad for it?

Thirty-two cases of self-denial are reported. These can all be classed under the sections, "For others," "For self."

The numerical rubrics are: Gave up pleasure for others 10. Lenten denials 4. Sweetmeats 3. Gave up new clothes

in order to give the money to others 2. Stayed home from church for sake of a sick friend 2. A trip to the seashore for sister's sake 1. Remained at home to let mother go 1. Abstained from dancing for father's sake 1. Gave up a trip for the sake of helping another 1. Gave up a trip to Europe for the sake of an education 1. Gave up a concert for sister's sake 1. Gave up a sail for mother 1. Gave away to a poor girl a dress which I wanted 1. Gave up entertainments 1. Gave her only doll to a poor girl 1.

The determining element of the denials are altruistic 27. Sense of justice and duty 3. Egoistic 2.

There are but 6 clear cases of self-control, and these have their origin in the thought of the consequences (a) to others (b) to self. Sense of Honor, and Sense of Duty.

Some frank testimony was given concerning besetting faults—48 are mentioned in the following order: Temper 12. Selfishness 6. Pride 3. Conceit 3. Fretting and worrying 2. Over-sensitive 2. Spiteful 2. Jealous 2. Procrastinating 2. Uncontrollable tongue 2. Laziness 2. Swearing 1. Forgetfulness 1. Deceitfulness 1. Lying 1. Longing for things I cannot have 1. Uncharitable 1. Fault-finding 1. Impertinent 1. Willful 1. Sexual perversion 1.

The cures suggested are: "keep out of the way of temptation," "will-power," "cultivate love for others," "repeat passages of Scripture," "memory of past consequences."

CONSCIENCE CASES.

Sec. III. State a few conscience cases in yourself or others, describing the circumstances that helped or confused them.

The following cases were presented:

Studying on Sunday 7. Dancing 4. Working on Sunday 3. Reading fiction on Sunday 3. Card playing 2. Theatre-going 2. Sunday excursions 2. Waltzing with young men 2. Plagiarism 2. Christian activity 1. Sunday travelling 1. Betting 1. Confession of misdeeds 1. Jesuitical lying 1. Boating on Sunday 1. Party going 1. Alcoholic drinking 1. Attending social entertainments 1.

There was nothing to show that conscience plays any great factor in life before the age of 9, and very little mention was made of it before 13. The cases, however, are altogether too few to make any generalized conclusion concerning the age at which conscience becomes a potent element in the individual, yet it may be premised, that it does not reveal its existence at as early an age as many would believe. The writer knows a child in whom it was abnormally developed at the age of 3. Impulse governs most of the activities of early childhood.

DIRECT MORAL EDUCATION.

Sec. IV. What has been the effect on yourself or others of direct moral inculcation, whether at home in the form of a plain talk, a good dressing down, or advice not sought, or preaching in and out of the pulpit, and school or college instruction in morals? What book, system or idea in each have been morally helpful?

The returns are filled with such statements as: "preaching, or advice unsought, has never done me good, suggestion has." "Direct moral inculcation has never had much effect upon me, unless it came from one I loved." "I have had a good dressing down that did me good." "Instruction not directly aimed at me has been more helpful than that received in any other way." "I have read a number of books that have helped me." "The talks of some people help me, while that of others does me harm." "Direct advice given unsought has done me harm." "Friendly talks have done much in forming my character." "Sermons have helped me many a time." "The early lessons of morality and virtue learned at father's and mother's knee have always been potent in my life."

The number who answered this section was small, not more than a third of those reporting. The returns show the following table:

Benefited by a plain talk 30, injured 4; a good dressing down, benefited 9, injured 2; advice sought, benefited 5, injured 1; advice not sought, benefited 7, injured 16; preaching from the pulpit, benefited 40, injured 2; preaching out of pulpit, benefited 0, injured 7.

The boys were almost unanimous in commending the effects of a good plain talk, and none had a word to say against a good dressing down. Many spoke very gratefully for having had punishment in due season. It does seem that there comes a period in the existence of many a youth, when he conceives the idea that he is lord of creation, and his future usefulness as a member of society depends upon the thorough eradication of this disease of his system by the faithful and energetic administration of birch tonic.

DIRECT RELIGIOUS INCULCATION.

Sec. V. What has been the effect of direct religious inculcation and what changes of religious views have affected your moral conduct, your conscience and sense of right? Have liberalizing theological opinions made you better or worse, and how?

Sixty-eight returns were received to this section. Some of the expressions quite common to the reports, are: "Direct

religious teaching has purified my ideas of life." "Liberalizing opinions have not in any way benefited me." "I have always lived in a Christian home and have had religious teaching which I prize." "Since becoming a Christian, I find my moral conduct changed." "Liberalizing opinions but drive me to the old faith." "Liberalizing opinions have had but little effect on my life. I cannot forfeit the peace of believing in Christ for blind theory." "Religious teaching has made me decidedly better." "I think liberalizing theological opinions have made me better," etc.

Of those reporting, 50 say they were benefited by direct religious inculcation, 5 that they were injured; while 3 say they were affected in no way, 10 mentioned example with some precept.

Proper books seem to play an important function in religious education.

Very few mentioned liberalizing theological opinions (8), and they put an interpretation on these words that is not usual. The returns clearly point to the important duty of parents and friends to give proper religious instruction at a very early age.

INFLUENCE OF TEACHER.

Sec. VI. Reflect which teacher or teachers from kindergarten to college, or professional school, or in Sunday school, you have liked best and been influenced most by, and then try to state wherein the influence was felt. What qualities impressed you most, and how? *i. e.*, account, if you can, for the exceptional influence of that particular teacher. Was it generally felt, or peculiar to you and your set? Was it connected with dress, manner, voice, good looks, religious activity or piety, bearing, learning, etc., and how did each salient quality affect you?

G., 18. "The accuracy in work, exactness, and learning of Miss B. have influenced me very much. Through her, I have been led to see and realize more plainly, that there is no way like the right way, and that doing little things wrong, leads to greater error."

G., 19. "Mr. R.'s steady manner, quiet, but stern ways, led me from being a reckless girl, loving evil associates, to be more considerate of my ways. I tried to imitate him. His whole life was one of peace." She also speaks of her S. S. teacher, and says her influence was associated with her voice, manner and religious activity.

G., 18. "Miss T.'s influence was felt morally. It was connected with her voice, manner and religious activity."

G., 19. Speaking of 5 teachers, says: "It was their learning that influenced me."

G., 20. "My teacher's piety and kindness improved me. She was tall and pretty."

G., 19. "A teacher who had fair hair, sweet voice and gentle manners, influenced me for good. I would go home and play I was Miss

G. She dressed neatly. Her influence tended to make me gentle, lovable and neat."

G., 18. "I was influenced by the dress and manners of Miss A.; by the sprightliness and cheerfulness of Miss B., and by the intelligence of Miss C. Her life seemed so pure, so sweet, so saint-like. Her movement and her ways charmed me. Another teacher created in me love of honor, justice and right. She made me see the true purpose of life. She taught me self-control, self-sacrifice, and led me to love my God. I often wonder how she has done so, as her lessons in moral instruction have been few."

G., 18. "I so liked the voice and manner of one of my teachers, that I longed to be able to talk and act like her. I used to try to smile like her and tried to pronounce words like her."

G., 19. "My teacher wore dark colors, had short, black curly hair, skin as fair as could be, a pleasant manner and voice; I wanted to become a teacher like her, dress like her, and act, walk and talk like her. I even wished my hair (red) dyed the same color as hers."

G., 20. "A male teacher was so cross that he created in me a hatred of school and all connected therewith."

G., 20. "At boarding school a male teacher influenced me by his pleasant manners, his knowledge, neatness of appearance, his patience and courtesy in class, and his consistent life."

G., 19. "By his example, my teacher has taught me never to judge human character hastily."

G., 17. "Prof. R.'s knowledge influenced us all very much."

G., 17. "I was influenced for bad by a teacher who was always preaching religion. This led me to despise it. It created in the school a dare-devil spirit. The teacher who succeeded her reformed the school through her actions rather than her words."

G., 17. "My teacher was the first to show me beauty in poetry, and incited me to strive to have nothing but pure thoughts. Her pretty hands enchanted me. Another teacher has planted in me good impulses. She attracted me by her winning ways and smiles. Mr. L. has influenced me by his kindness. All have created in me a thirst for knowledge."

G. W. "A teacher who wore a severely made, tailor-cut-dress, which gave her the appearance of being gloved all over, excited in me the feeling of repulsion."

G. N. "I do not think anything my teacher said influenced me as much as the sweet expression of her face."

G. R. "My teacher's influence was most closely connected with her personal appearance, for she was always very pretty and wore becoming dresses."

G. M. "Her deep religious life made a strong impression on those about her."

G. F. "By her conduct and course in the school, she made me feel the best way to live is to be gentle, and generous, and kind."

G. R. "Through all my public school days I was driven from my teachers by their overbearing manners and sarcastic ways. When 20 I attended a seminary. There I was influenced by a teacher who was not handsome but attractive, well educated, who had full self-control, understood her pupils, was full of encouragement, full of sympathy, gentle and modest in all her ways, and of a deep spiritual nature, not gushing but true. All this inspired me to a life like hers."

B., 20. "I was influenced by Mr. P.'s manly ways, his kind and fatherly regard for his pupils, his sense of right and justice and the personal aid he constantly gave us."

B., 19. "Miss A. won me by her beautiful face, winning ways, and fine dresses. She took a personal interest in her pupils."

B., 18. "My S. S. teacher has influenced me much by her cheerfulness. Her voice is soft and inspiring, her manners pleasing, and she is so interesting. Her life is encouraging."

B., 18. "I was attracted by my last teacher, who has black hair and eyes, which color I admire. Her voice and looks draw one to her. She was kind, all her ways were helpful."

B., 19. Speaking of 7 teachers, says: "What influenced me most was their learning. It made me put forth more effort to reach the same goal."

B., 22. "My S. S. teacher was not good looking. She always dressed neat, and her manner and voice were pleasing. Her quiet, Christian life, and her personal interest, were strong factors."

B., 17. "Two teachers have influenced me. The one by her Godliness, which was coupled with good looks, pleasing voice and manners; the other by her moral and intellectual qualities."

B., 18. "Miss S. impressed me by her goodness. She never left her religion at home."

B., 19. Speaks of several teachers, and says: "Their influence was due to manners, education, bearing and piety."

B., 18. "I tried to imitate a teacher at H. S., who was a straightforward man, careful of his language and conduct, and very considerate of others."

B., 20. "Miss P., by her manner towards her pupils, and her personal interest, has aided me much."

B., 18. "Prof. C. has influenced me by his patience, dislike for dishonesty and untruthfulness, and by his fairness with his pupils."

This question was answered by 23 boys and 160 girls. As few gave the exact time of the influence, no table can be prepared which might go to show the age at which the young are most susceptible to impressions from the teacher.

An endeavor has also been made to discover whether male teachers exert a greater influence over boys than do female teachers, and *vice versa* for the girls, but with the exception of the general impression one gets from the returns, the attempt has not been fruitful.

From the showing of the table and the testimony of the writers, it is safe to conclude, that there is an unconscious educative force emanating from the teacher's personality, and so operating upon the pupil as to become a powerful formative agent in the development of his character.

2nd. This force, being unconscious in its origin and in its attracting and transforming effect upon the plastic nature of the young, has its origin in what the teacher is, rather than in what he says.

3rd. It is a significant fact, that 149 out of a possible 183 mention the manner of the teacher as exerting such an influence over their natures. It has been said of more than one man, as of the Earl of Chatham, that "everybody felt there was something finer in the man than anything he ever said." It is this very something in the teacher, that will go down

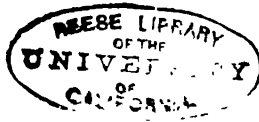
deeper than his words and either purify, or befoul the springs of action in his pupils.

TABLE NO. I.

SEX OF PUPIL.				SEX OF PUPIL.			
GIRLS. - 160				BOYS. - 23			
SEX OF TEACHER.				SEX OF TEACHER.			
	Male.	Female.	Total.		Male.	Female.	Total.
<i>Point of Influence.</i>				<i>Point of Influence.</i>			
Manner	14	114	128	Manner	7	14	21
Religion	5	55	60	Personal Interest	5	4	9
Precepts	16	33	49	Religious	0	8	8
Learning	12	41	53	Good Looks	1	6	7
Voice	5	47	51	Learning	2	4	6
Life	9	35	44	Voice	0	6	6
Personal Interest	3	39	42	Precepts	5	0	5
Good Looks	5	33	38	Life	1	3	4
Dress	3	34	37	Love for Truth	3	0	3
Love for Study	4	17	21	Interest in Teaching	1	2	3
Bearing	3	22	25	Patience and Justice	1	2	3
Interest in Teaching	2	14	16	Language	2	0	2
Language	4	10	14	Self-control	1	0	1
Patience and Justice	4	10	14	Bearing	0	1	1
Self-control	2	9	11	Dress	0	0	0
Love for Truth	0	3	3	Love for Study			
Praise	1	3	4	Praise			
Conscientiousness	0	3	3	Conscientiousness			
Musical Ability	0	2	2	Music			

4th. It is worthy of note that what attracts the pupil is the externals. Voice, Dress, Good Looks, Manners, Religious Activity far overtop the deeper moral elements, but these would be of but little avail did not a teacher possess a personality whereby love, obedience and respect may be inspired. Teachers' life and actions must harmonize. Example and precept are yoke fellows, and children are intensely keen in observing any disparity between them. The teacher's personality determines his worth and moral influence. He who would rule the little child and mould him into pure, noble, useful manhood, must himself be a model of virtue. How pertinent is the question—is not a teacher born, rather than made?

5th. The difference in the general character of the replies given by the boys, from those of the girls, suggests one of two things: either boys do not possess the power of introspection to the same degree as do girls, or else they seriously suffer by passing the period of early youth wholly under the influence of female teachers. As boys detest effeminate qualities in boys, there cannot be, in the female teacher as in the male, the same inspiration and incitement to develop the manly virtues.



6th. Far more powerful than ethical hand-books is *moral life*.

INFLUENCE OF COMPANIONS.

Sec. VII. What playmates, intimate cronies, or friendships have you had that affected your moral nature for good or for bad? Describe concisely each such person, physically and psychically. What temperament, and what were the qualities that especially influenced you, and how? What is your own temperament?

G., 19. "I was very intimate with a girl from 6-16; she was a very religious girl, and it was she who first set me thinking about religion."

G., 20. "I have a companion who is unselfish, cheerful, earnest in all she does and says, pious, and has a great love for humanity. She has made me feel that life is to be used not so much for ourselves as for others."

G., 19. "When young, I had a companion who influenced me for evil. She was stingy, cruel, headstrong and hypocritical. I would do anything for her. She almost weaned me away from my home, my mother and my church. I became disrespectful to my elders, I was almost a liar. I gossiped and neglected my school and my work."

G. O. "A chum who was rich, pretty and well dressed, affected me for evil. She was not studious, was full of fun, fickle, selfish, careless, impulsive, proud and demonstrative. I soon grew like her."

G. H. "One of my companions filled my mind with decidedly wrong thoughts. She was basely deceitful. She danced and flirted and perhaps worse. Though she has gone completely out of my life, yet when I recall the past she stands out as the strongest figure in it, and the wrong I had done to my character through her has never been wholly effaced."

G., 18. "A girl companion, 5 years my senior, safely piloted me through the period, when girls are boy crazy. She toned me down and made a sensible girl of me."

G., 18. "I was intimate with a girl from Chicago who talked to me upon delicate subjects. She invented stories and told them. She almost succeeded in making me believe all people vile and immoral. I almost lost faith in goodness and virtue. So strong was this influence that even to-day the habits of thought then formed are but little eradicated."

G., 20. "When 13 I formed a close friendship with a good girl. She was fond of fun but it must be of the right sort. She was never afraid to say no. I tried to imitate her ways and virtues."

G., 17. "Since coming to the Normal School, a girl companion has helped me to solve questions of moral conduct and also aided me to greater self-control."

G., 22. "A girl companion, who was very selfish, incited me against my parents. She used to say my mother thought more of my older sister than of me."

G., 18. "When 16 I was influenced by a girl companion who was bright, gay, fond of pleasure, and thoughtless. She could never see the serious side of life, did not care for study, nor had she any reverence for things sacred."

G., 17. "I am intimate with a young lady whose society always exhales virtuous influences. I always feel better after being with her."

G., 17. "When 13 a girl friend influenced me for evil. If a bad

meaning could be found in a statement she always discovered it. She had a supply of comic stories which were not always chaste."

G., 20. "From 12-16 I was influenced by a girl friend by her pride, her love for dress and her fondness for winning corrupt friends. Through her I neglected my studies, lost love for my home friends, and increased my love for things vile."

G., 17. "Once I had a playmate, pretty and womanly, always kind and courteous, who exercised a great influence over me, as I was the opposite in character and appearance. She taught me to weigh well my actions, to see whether they were right or wrong, kind or unkind."

G., 19. "When 8 I was induced by a playmate to take pennies from my father's money-box."

B., 18. "When 10 I was influenced for evil by a bad boy, who neglected his studies. When 14 I met another boy who was a moral lad, clever at school and careful in all his acts and words. His influence greatly counteracted that of my former companion."

B., 18. "I formed a close friendship with a lad older than myself. He kept me steady, as he had a clear head and high ideals. My morals generally were improved by this association."

B., 19. "A thoughtless, mischievous boy influenced me for evil. He would induce me to run away from home, and then invent some story to tell my mother to hide the act."

B., 20. "When 10, a boy 3 years my senior induced me to smoke and use profane language."

B., 18. "Several years ago I was led to contract immoral and vile habits that I would not otherwise have acquired, by a chum. Physically he was strong and robust; psychically he was happy, gay, bright, good-natured and good looking."

B., 19. "The playmate that influenced me most was a boy of my own age. He was a brilliant scholar, had a happy faculty of not getting into a quarrel, and never returned injury for injury. I was very disagreeable, revengeful, selfish and willful. Influenced by my companion, I cultivated his good nature, and now have gained such self-control, that I hardly ever get into trouble and find delight in being pleasant."

The author knows a man 46 years of age, who has a mania for discovering the vile and obscene in any statement, no matter how pure may be the thought of the speaker. He also knows another man, 42, whose delight is in an immoral tale.

Nearly 200 replies were given to this part of the questionnaire. They furnish some interesting material concerning the manner in which social environment operates.

The good results produced by companionship are: kindness and sympathy G. 32-B-6. Manners 30-6. Self-control 20-5. Christian virtues 20-4. Religious influence 22-1. Disposition improved 15-8. Consideration of others 18-4. Sense of truth 14-3. Æsthetic tastes 15-2. Studiousness 12-2. Ambition find 10-2. Judiciousness 9-3. Language improved 8-1. Character more decisive 6-5. Determination to overcome obstacles 5-4. Truer views of life 6-1. Greater love for parents 3-0.

The evil effects were shown in: General conduct 15-14. General morals 20-6. Untruthfulness 15-4. Evil thoughts

12—5. Boisterous and rough 10—4. Selfishness 10—2. Disobedient 5—3. Swearing 4—4. Neglectful of duty 5—2. Irreligious 5—1. Slang 3—3. Smoking 0—4. Temper 2—1. Neglectful of home 2—0. Love of dress 2—0. Sarcastic 1—0. Stealing 1—0.

An interesting table was obtained which went to show that the age at which these external influences are most felt is from 10—15. The curve reaches its highest point at puberty. The potency of companionship for good, or evil, is further shown by the fact that only 10 returns refused to acknowledge themselves in any way indebted to their associates for good, or evil. It is safe to conclude that social *milieu* is a moral factor second only to that of the home.

Only 6 girls were influenced by boy companions, 5 for good and 1 for evil. 3 boys were affected by girls, 1 for good and 2 for evil. 2 girls speak of being influenced for good by making some lads their companions and trying to reform them.

This practice cannot be too severely condemned. The wail of many a broken-hearted wife, and of social castaways is: "I thought I could reform him." Parents should never be so injudicious as to permit their sons and daughters to undertake such doubtful tasks. The intense subtlety and efficiency of suggestion has been fully shown in an excellent paper by Mr. M. H. Small (See *PED. SEM.* Vol IV, No. 2).

An effort was made to discover the part played by temperament in these associations, but here the answers were too confused to admit of any satisfactory interpretation; 46 were attracted by persons of the opposite disposition, 43 by similar, 50 gave no clue, and 50 confused the matter.

ETHICAL RELATIONS WITH PARENTS.

Sec. VIII. What were your ethical relations with your parents? What kind of personal influence emanated from your father and from your mother? What in their example and in their precepts affected you? Give incidents and details.

G., 19. "My father and mother are religious people, and have created in me a great love for all humanity, for nature, and have helped me to appreciate and put into practice many of the beautiful thoughts of Scripture. My mother exemplifies in her life self-sacrifice and submission. My father sets a most delightful example of honesty, uprightness and patience."

G., 20 "Mother died when I was five. Father always insisted on my doing what was right and punished me when I did wrong."

G., 17. "Mother always taught me to be truthful and respectful. My father's business has kept him away from home so much that I owe no particular influence to him. Mother's unselfishness and sympathy have appealed to me."

G., 14. "Father has always hated a falsehood. He is very forgiving and has taught me to be so also."



G., 18. "My father never gave me any direct moral instruction, but his example was constantly before me. He did not tell me the Sabbath was a holy day, but he showed his reverence for it. He never told me that it was right to go church, but he attended divine service faithfully. He never told me that I ought to be honest and truthful, but he showed these virtues continually."

G., 19. "My mother's Christian character has influenced me greatly. To know her is to love her. Father strove to cultivate in his sons industrial habits and upright characters."

G., 19. "My mother ruled her children by love, never by fear. We all felt in her our dearest and closest friend."

G., 17. "My father taught me to be obedient, and never to jest at less worldly favored classmates. From him I learned kindness. Mother planted in me the love for truthfulness and fidelity."

G., 18. "Father has taught me to love books and music; and mother, to hate haughtiness and show."

G., 17. "I have been influenced more by the benevolent, loving, persevering and religious qualities of my parents. Our home has ever been one of peace and trust."

G., 17. "I have always felt free to discuss any ethical matter with my parents. Father's strong regard for truth, and his generous and forgiving nature have left their imprint upon me. I feel my mother's presence wherever I go."

G., 20. "Father had a great influence over me in regard to gossiping. He always encouraged us to speak of others as we would have them speak of us. Mamma's charity, sympathy, unselfishness and affection have drawn me very close to her."

G., 18. "My father, a stern and practical man, attended to my lessons. Mother, to my religious and moral nature. She taught me consideration for others, the importance of punctual performance of all duties, and the necessity of doing good. I was allowed to make my own decisions and then reap the consequences. She moulded my character, teaching me truthfulness, honesty, good manners and confidence in God."

G., 18. "Papa and mamma are my advisors on all subjects relating to morals."

G., 20. "Father is a reserved but strict man. His word is law, so that we have always had a feeling that we did things not because it was right, but because he told us to. Mother teaches us the rules of society, and to distinguish between what is proper and improper, rather than between right and wrong."

G., 18. "Mamma was very fond of music and we had a great deal in our home, so that I have grown fond of it. Papa loves reading and I have caught the same spirit."

G., 18. "My mother died when I was six. I, however, remember her kindness, and how she felt when her daughter did wrong. She still exerts an influence over me, as I try to do everything to please her in heaven. I have no confidence in my father, who seems angry with me all the time."

G., 24. "My parents were the embodiments of the Christian virtues, and their lives give me confidence in the Christian religion. Early in life they taught me 'Our Father,' and 'Gentle Jesus,' and the memories of the Scripture readings and the family altar influence my life to-day."

G., 16. "From my father's talk I have gleaned some skeptical ideas, which, I sometimes think, have injured me."

G., 25. "I have always had the closest companionship with my mother, but not so with my father, whom I fear rather than reverence and love."

G., 20. "My father was very attentive to my behavior, company, reading, all that would morally affect me. He punished me for wrong doing, inspired in me the love for learning, and instructed me in the Christian duties. Somehow my mother has not influenced me like most mothers do their daughters."

G., 18. "I never had a sister, so mother has been to me both mother and sister. I told her all my little troubles and secrets that girls tell to their sisters."

G., 18. "The example of my parents has been most inspiring. I can never forget the first verse of Scripture my mother taught me: 'A good name is rather to be chosen than great riches, and loving favor than silver and gold.' Papa's sunny ways have influenced me much."

B., 18. "My mother used to attend church every Sunday and took me with her. Now I rarely stay away."

B., 18. "My mother always read her Bible, and this made a deep impression on me. I was impressed by the pleasant manner between father and mother. Father always tried to show me the right and make me do it, even if he had to punish me."

B., 20. "The personal influence I received from my father is a dislike for tobacco and any of those bad habits. My mother's influence was that of generosity and self-denial."

B., 20. "I was ever influenced by the uprightness and integrity of my parents. They early taught me the nature of right and wrong and their respective results. The familiar sight of father and mother reading their Bible is an example that abides well with their precepts."

B., 18. "I was influenced by the confidence and harmony that always existed between my parents. My mother exerted a greater moral influence over me than did my father."

B., 17. "My father induced me to be saving, generous, kind-hearted and truthful. Mother taught me to be obedient, loving, truthful and temperate, and from their combined example and instruction I have grown religious."

B., 20. "Many personal influences emanated from father, but I think more from mother. They were both devout and watchful of me. They set me a good example. They were strong opponents of the liquor traffic, and so am I. Father smoked, but told me not to. I, however, have followed his example rather than his precept."

B., 23. "The relation with my mother was very different from that with father. To her I would go with all my little troubles. It was from her I received my first training in spiritual things."

B., 18. "From my mother I have learned lessons of self-sacrifice and industry; from father, a true sense of honor and honesty."

B., 18. "I have never received more than half a dozen religious instructions from my parents. Father died when I was young, and I have been away from mother. I have sorely missed their consolations and their aid."

B., 19. "My parents allowed me great freedom in my early life, as long as I did nothing very wrong, but they constantly warned me against wrong practices and corrupt persons. I learned to smoke, but through the kind words of mother and the example of father, who gave up smoking for my sake, I was led to abandon the habit."

The ethical relations with parents, with two exceptions, were always described as of a pleasant and helpful nature. The intimacy existing between mother and child seemed to be more marked, even among the boys, than that between father and son, or daughter. This, however, is due chiefly to the external

business relation of the father, which occupied his time and attention. The following tables show the manner and relation of the parental influence.

Fathers: Christian consistency 31—0.¹ Hatred of falsehood 22—4. Generosity 19—1. Honesty 15—4. Kindness 12—2. Justice 10—0. Forgiving spirit 9—0. Hatred of gossip 9—0. Unselfishness 7—0. Sabbath observance 3—3. Hatred of swearing 2—3. Perseverance 4—0. Patience 4—0. Abstinence from tobacco 1—2. Mental tastes 3—0. Self-respect 3—0. Decision of character 3—0. Temperance 0—3. Control of temper 2—0. Gratitude 2—0. Reading habit 2—0. Reverence and respect 1—1. Obedience 0—2. Skeptical ideas 1—0. Frugality 0—1.

Mothers: Christian virtues 70—6. Unselfishness 24—2. Morals 17—3. Manners 18—2. Sympathy 18—0. The Golden Rule 18—0. Obedience 12—4. Liberality 14—1. Affection 12—1. Hatred of falsehood 9—4. Good disposition 11—1. Little confidences 10—1. Æsthetic tastes 11—0. Patience 10—0. Kindness 8—1. Honesty 1—3. Reverence and respect 2—0. Perseverance 2—0. Sobriety 0—2. Hatred of swearing 0—2. Love for animals 1—0. Good temper 1—0. Purity 0—1. Industry 0—1. Bible reading 0—1. Sabbath observance 0—1.

From these tables it is safe to conclude that there does not exist that difference in moral influence of the parents due to sex, that so many are inclined to believe. Nearly all the fundamental constituents of noble character are found in each, and there is no just reason to doubt that the influence of the father would be equally as potent as that of the mother, did he enjoy the same protracted home relations as does the mother.

2nd. Moral training is not the establishment of mere moral habits, as the ethical people advocate, but is the unfolding and widening of the deeper instincts, particularly the emotions, and has its roots in the religious sentiments that so early pervade child life. Wordsworth truly says: "Heaven lies about us in our infancy." The parent stands in such relation to the child as to enable him to seize upon this seed germ and so nurture it that it will produce the beautiful plant of a pure, noble character.

3rd. Possessing as they do the ear, the heart and the sympathy of the child, parents have it within their power to develop the child into almost whatever they may wish. Hence, if they would but get back to the Hebrew conception of the family, and would devote themselves as diligently to the nurture of their children, as they do now to the ways of fashionable and

¹ First figure represents girls, second boys.

business life, or better still, with all the solicitousness that they exercise in the rearing of their horses and dogs, the problem of the moral regeneration of the race would be most thoroughly solved.

ADULT INFLUENCE.

Sec. IX. Have other persons than the above influenced your life much, or have you had special attractions or repulsions to individuals, either older or younger, of the same or opposite sex, or to whom you were inclined to go for counsel and conference in confidential matters? Describe the influence of such association.

G., 18. "An old lady to whom I have been accustomed to go for counsel, has had a great influence on my life. She is a thorough Christian, full of sympathy with the young and ever ready to aid."

G., 20. "An old lady of 60 years strongly drew me to her and left the imprint of her character on me. She has a beautiful, calm face, that does one good to look at. She has such a happy way of saying the right thing, and always speaks well of everybody."

G., 21. "When younger I was strongly attracted by an elderly lady whom I tried to make my ideal. Her goodness, beauty of character, kindness, and her great learning strongly influenced me."

G., 25. "I frequently have special attractions to individuals and as frequently repulsions. I prefer principally those of my own sex, both older and younger."

G., 20. "There is one young man whom I seem to despise. He is a fine young man, pleasant and fairly good looking, and of good family. I think his conceit is what repels me. I always go to my older sisters for counsel."

G., 19. "I know a person whom the first time I saw, I disliked. He has such sharp, black eyes, and it seemed as if, when his eye was fixed on you, it would never leave you. He was not the best of men."

G., 18. "I am repelled by a young man on account of his self-importance. He thinks he knows everything and wants to oversee everything."

G., 18. "There is a dressmaker for whom I had a strong repulsion, I cannot tell why. Once when she made me a dress, I worried over it so every time I put it on, that I became ill. I could not bear her presence, and always felt she was going to do me harm."

G., 18. "I had a strong attraction towards a minister who used to visit at my home. He was always ready to give me assistance in my studies, and tried to answer all my questions."

G., 17. "When I first went to H. S. I was attracted by a young man who was an infidel. He so influenced me that ever since I doubt almost everything. I had an aversion for a schoolmate who had a peculiar way of wearing her hair and of airing her knowledge."

G., 20. "There is a lady friend much older than I, to whom I often go for advice. She is such a good Christian, has such good judgment, and is so sweet-tempered."

G., 19. "There was a certain *so-called* minister, whom I always hated. The first time I met him, I felt a strong dislike for him. He attempted to flirt with me, which made me despise him. When I found out that he was a minister, I was glad I was not a man. He was a boorish, low, lying Englishman. His influence in the town was for evil, as he broke up families and life-long friendships. His influence

over me was good, in that it put me on my guard against cranks, and bad, in that it made me disgusted with religious affairs."

B., 20. "There is a Christian lady, who has influenced me by pleading with me to become a Christian. She got me to sign a pledge that I would not drink any intoxicating liquors, nor use tobacco, nor bad language."

B., 20. "When I was younger, an old colored woman, who used to work for us, attracted me very much by her kindness and generosity. I used to consult her in many things and looked up to her. She was a second mother to me, and always influenced me for good."

B., 20. "I was attached to an aunt, who was kind and indulgent. She used to take me for walks in the fields and woods, and tell me all about the birds and flowers. To her I told all my troubles."

B., 20. "I am attracted to B. M. by her social manners, her willingness to help others, and her firm stand against anything degrading."

B., 23. "When I associated with boys several years my senior. These boys taught me to smoke and swear, assuring me that such things make a small boy appear manly."

The number who answered this question is exceedingly limited—55 in all.

Four boys were attracted by males older than themselves, and 7 were drawn to elderly females. The reasons given for this friendship were in the case of the males, intellectual endowments, and practical experience; in the case of the females, kindness, manners, Christian virtues, opposition to evil.

Twelve females were attracted by males older than themselves, and 32 by females. The reasons given for forming the friendship with the males, are: Goodness of character 4. Sympathy 3. Gifts 2. Ministerial attraction 2. Interest in my studies 1. With the females: Christian character 16. Blood relations (grandma and auntie) 9. Manners 4. Kindness 3. Cheerfulness 2. Learning 2.

Eleven girls speak of making younger boys their companions, and 2 report the same of younger girls.

No very definite results concerning the effect of these associations were obtained, but the following were clearly mentioned: Intellectual stimulus 4. Manner of life changed 3. Kindlier nature 3. Sunnier disposition 2. Better manners 2. Religious views strengthened 2. Acquired a contempt for religion 2. Became a total abstainer 1. Truer conceptions of womanhood 1. Learned to follow the lead of elders 1. Developed my temper 1. Clearer sense of right and wrong 1. Greater care in choosing companions 1. Learned to swear 1. To smoke 1.

Twenty-one cases of repulsion are mentioned with 18 reasons assigned. The repulsion in almost every case began with sight and was persistent. The causes given, are: Self-assertion 4. Manners 3. Style of dress 3. Actions 3. Personal appearance 1. Physical deformity 1. Awe 1. Lack of regard for others 1. Too newsy 1.

The most striking point brought out in this section is the

great influence character has in bringing into association the youth and the aged. Men of giant intellects are passed by, while the kind, generous, pious colored washerwoman wins the heart of the lad, and with her sympathy and interest binds him to her and leads him into paths of rectitude.

2nd. The evidence is very clear that, wherever such friendship was formed, it has been beneficial, only two instances being given to the contrary. From this we may conclude that if parents have neither the time nor the disposition to become the companions and guides of their offspring, they can do the child no better service than to encourage him to form a close friendship with some pure soul, who is interested in the elevation of humanity.

It is interesting to compare the influences of the preceding four classes. The *teacher* seems to stimulate the accessories of character, such as manners, sense of social and civil relationships, ambition, tastes, etc. The *parent* develops the fundamentals, such as sympathy, reverence, love, sense of truth, justice, mercy, kindness, meekness, patience, etc.

Companions develop the social qualities, and afford practical application of the teachings of the home and school, and prepare the boy or girl for the further duties of citizenship, by cultivating the sense of independence, individuality, altruism, etc.

The influence exerted by the *fourth* is rather of an advisory nature. Many of them, however, become ideals to the young, and thus stimulate healthy growth.

In the present constitution of social life these four factors *will* operate in either a beneficial or injurious manner upon the growing boy and girl. It becomes the parents, therefore, to see first that their own life and home are right, then to guard their child from undue contamination from a corrupted *milieu*. This can be accomplished, not by building a wall around the child, but by erecting a wall within him, which must be razed before the enemy can take possession. In other words, get the child interested in the useful and the beautiful, so that the obscene and the degrading will have no attraction for him.

Children have certain inalienable rights which fatherhood and motherhood must recognize. They have a right to stand first in the affections, the interests, and the endeavors, of the parent; they have a right to all that is good and noble and encouraging in the parent life; they have a right to find their home the most pleasant spot on earth; they have a right to all the means of refinement that lie within the limits of the parents' purse; they have a right to proper food and clothing for the body, but equally as great a right to mental and moral nourishment, that neither body nor soul may be atrophied; they have a right to have the laws of their development, both phy-

biological and psychical, well understood and held sacred by those in authority over them ; they have a right to have their better nature so strengthened that when the seeds of evil speech and evil action fall upon their life, they will take no deep and abiding root, because the soil is already occupied by flowers and the fruits of better hopes.

GAMES.

Sec. X. What games have you preferred and what has been their influence in developing manliness or womanliness, sense of justice and fair play, honesty, perseverance, hardihood, physical strength, and what recreations do you prefer, and why? What is their effect?

G., 18. "Hide and Seek and Blindman's Buff have helped me to develop honesty. I have been tempted to 'peep,' I have resisted. Cards is now my favorite game. It develops honesty and fair-play. My favorite recreation is 'Day-Dreaming.'"

G., 18. "I like to walk through the woods and over the hills. It has developed a love for nature and made me observing. I am always happy when dancing, and think of nothing but the delightful motion and the rhythm. Boating has also developed a love for nature."

G., 18. "Authors has developed my memory, reasoning, judgment, and made me familiar with the writer and their works. My favorite recreation is roaming through the woods,"

G., 19. "Playing house has developed womanhood, and jackstones perseverance. Putting our country together, and ambassador, developed the intellectual powers."

G., 17. "Croquet has developed a sense of honesty and fair-play."

G., 17. "Games that have influenced me in developing womanliness, sense of justice, perseverance and physical strength, are tennis, cards, chess, field sports and playing house. My recreations are walking and dancing."

G., 17. "Playing 'house' and 'doll dressing' helped me to become more womanly. I saw through them the value of knowing how to do things carefully and correctly. Tennis and croquet have developed perseverance."

G., 16. "My recreations are bicycling and walking, because of the fascination of the movement and the sense of power they give."

G., 18. "My favorite games are *tag*, anagrams, and 'Who stole Joseph's coat.' They cultivate attention and concentration."

G., 17. "Reading is my favorite pastime. It has made me unsocial and selfish, even, while at times it has stirred in me high resolves."

G., 20. "Guessing games and puzzles have developed in me perseverance."

G., 17. "When a child I used to like to play school very much. I was generally chosen teacher. I thought it nice to have charge of a school. It made me more dignified and important."

G., 18. "My indoor games were card games, but they were not very helpful, as I almost always cheated."

G., 17. "I am fond of parchesi. It develops honesty, fair-play and perseverance."

G., 27. "For recreation I prefer dancing and skating. Their influence is to make the body strong, graceful and responsive, and thus indirectly improves the mind."

B., 18. "I have always been fond of games of cards, checkers and dominoes. If they had any moral influence, it was bad, for I was very apt to cheat and often studied out injurious plans to carry it out. I am fond of football, which develops strength, and, if rightly played, manliness and hardihood."

B., 19. "My favorite games are tennis and base ball. They have developed manliness, honesty, perseverance and physical strength."

B., 18. "I feel a great sense of relief, when after being at work all day, I can jump on my wheel and take a run of ten miles or so, or take a boat and row about the lake for a short time."

B., 20. "Checkers and cards bring out fair-play, justice and perseverance; base ball and football, manliness and physical strength."

B., 20. "I obtain greatest pleasure in taking walks through the woods, finding some secluded spot, lying down and enjoying the absence of human noises, having nothing to do but listen to the birds and allow my thoughts to dwell on the beauties of nature and their maker. After such contemplation, I sometimes feel so buoyant, that the desire to run almost overpowers me."

B., 18. "I like to play football because it gives you a chance to show people what stuff you are made of, both morally and mentally."

B., 20. "I always prefer a game of ball. It develops a keen sense of justice, perseverance, honesty and physical strength, one learns perseverance when the game is going against one."

B., 20. "Little Old Man had a tendency to curb a bad temper and uproot injustice. It also developed hardihood."

B., 20. "The games I prefer are tennis, base ball, checkers, parchesi. Base ball and tennis have had an influence in developing my body; checkers in arousing my reasoning powers, parchesi perseverance. I prefer reading and rowing for recreations."

The following list shows the games played by the girls:

Hide and seek 56. Croquet 43. Tag 41. Tennis 36. Checkers 23. Parchesi 22. Authors 19. Dolls 18. House 17. Cards 16. Base ball 15. Blindman's buff 15. Pigs in clover 12. Prisoner's base 12. Jackstones 11. Jumping rope 9. Halma 9. Dominoes 9. I spy 6. Chess 5. Duck on the rock 5. Fox and geese 5. Hop-scotch, tiddledy winks 5. School 5. Messenger boy 4. Old maid 4. Euchre 4. Pussy wants a corner 4. Hoop-rolling 3. Drop the handkerchief, puzzles, whist, marbles, solitaire, kick the wicket, football (3 each). Anagrams, Antony over, colors, shuttlecock, battledore, basket ball, pull away, horse, jack straws, casino, see-saw, mumblety peg, blue bird, ambassadors, robbers, lotto, black bear (2 each). Beanbag, fish-pond, twenty questions, hearts, color of the bird, come to supper, dog on wood, crack the whip, charades, sense steps, hide the thimble, puzzle fifteen, kick the can, red soldier cap, cribbage, bowling, London bridge is falling down, Jacob and Rachel, hare and hounds, my ship's arrived, bright idea, spider and the fly, Louisa, wild horse, golden pavement, consequences, snap, hunt the slipper, kick the stick, geography cards, dice, Peter Coddle's dinner party, putting together our country, princess and captain, ten pins, gymnasium, cars, cross and wood, can can, old witch, running on cans, walking on stilts,

backgammon, criss-cross, here we go round the mulberry tree, toll-gate, giants, Copenhagen, needle's eye, word-making, catch, jack-a-bow, innocence abroad, go bang, mother goose, catch fish, circus, church, babminton, Indians and guessing games.

Games by the boys, are: Base ball 14. Football 9. Checkers 8. Cards 7. Tennis 6. Marbles 4. Tag 4. Croquet 4. Bowling 3. Hide and seek 3. Dominoes 2. Pool 2. Tiger 1. Blindman's buff, jumping rope, little old man, mossy, shinny, hide the thimble, forfeits, parchesi, chess, tit-tat-toe, quoits, billiards.

In regard to the moral import of games, the following classification shows the way they are viewed by the boys and girls:

Womanliness. Dolls 17. House 12. School 3.

Manliness. Ball 12 (football 6, base ball 6). Tennis 1. Cricket 1.

Mental Power. Authors 5. Checkers 3. Music 2. Chess 1. Cards 1. Parchesi 1. Charades 1. Ball 1. My ship's come home 1. Anagrams 1. Putting our country together 1.

Perseverance. Pigs-in-clover 9. Parchesi 9. Tennis 9. Checkers 8. Ball 8. Croquet 5. Halma 5. Cards 5. Puzzles 5. Hide and seek 5. I spy 2. Authors 2. Tag 2. Chess 2. Tiddledy winks 2. Black bear 1. Robber, puss in corner, backgammon, criss-cross, anagrams, solitaire, duck on rock, the spider and the fly, messenger force, jacks (each 1).

Justice and Fair Play. Croquet 22. Hide and seek 18. Cards 14. Checkers 12. Ball 12. Authors 7. Tag 6. Parchesi 6. Tennis 6. Halma 4. Blindman's buff 4. I spy 3. jacks 3. Prisoner's base 2. Hunt the slipper, black bear, puss in corner, backgammon, criss-cross, toll-gate, puzzles, bowling, dominoes, hop-scotch, ambassador, bright idea, Indians, tenpins, lotto, chess, innocence abroad, messenger force, quoits (each 1).

Honesty. Croquet 19. Hide and seek 18. Cards 12. Checkers 11. Parchesi 7. Ball 7. Authors 6. Blindman's buff 5. Jacks 5. Tennis 4. I spy 3. Tag 2. Halma 2. Prisoner's base 2. Hunt the slipper, black bear, puss in corner, toll-gate, fish pond, seven steps, colors, hop-scotch, chess, tiddledy winks, innocence abroad, go bang (1 each).

Cheating. Cards 4. Checkers 1. Croquet 1. Dominoes 1.

The recreations mentioned by the girls, are: Walking 35. rowing 35. Reading 33. Skating 32. Dancing 31. Driving 25. Bicycling 20. Riding 14. Music 14. Swimming 4. Coasting 3. Sailing 3. Talking 3. Rambling in the woods 3. Theater 2. Fancy work 2. Spring-board 1. Billiards 1. Tennis 1. Indian clubs 1. Day dreaming 1.

By the boys: Bicycling 7. Swimming 7. Skating 4. Riding

3. Gymnastics 3. Fishing 2. Strolling in the woods 2. Walking 2. Reading 2. Rowing 2. Hunting 1. Sailing 1. Driving 1. Music 1. Bowling 1. Dancing 1.

The reason assigned for the choice of a certain recreation was, in almost every instance, "for physical development."

A number of other reasons, however, were assigned, such as—

Dancing. Mere pleasure, develops the rhythmic sense, makes one graceful, enlivens the spirits, gives pleasant associations.

Theater-going. Pleasure, mental improvement, develops the sympathetic side.

Music. Brings rest and makes one more cheerful, stirs one's deeper nature, produces a feeling of sublimity, develops the æsthetic side.

Fishing. Develops patience and perseverance.

Bowling. Produces physical strength and control of muscular power.

Bicycling. For physical development, gives a sense of freedom and of independence, a great brightener of spirits. The motion is fascinating, pleasure, power to travel.

Rowing. Physical strength, restful.

Skating. Physical development, sense of freedom, hardihood, produces a better mood.

Bathing. Pleasure.

Reading. Takes my attention from my studies, develops sympathy, improves the mind, corrects one's views of life, pleasure; one said: "makes me unsociable and selfish."

Riding. Physical health, restful, brings one into contact with nature, revives drooping spirits.

Walking. Health, communion with nature, spiritual uplift, produces a better mood, pleasure.

It will at once be seen that the great incentive to recreation is the necessity of out-door exercise for health. The choice, however, is chiefly determined by the pleasure produced. The majority of returns state that they saw no particular moral worth in their pastimes. There is no doubt, however, that even these may be made the means of strengthening the moral sense, and the writer is of the opinion that unconsciously, from those avocations, there has accrued to all those reporting some moral wealth.

The returns give clear evidence in regard to the educative value of plays. By them there is developed justice, moderation, self-control, truthfulness, loyalty, brotherly love, courage, perseverance, resolution, perception, prudence, forbearance, sympathy, a training of hand, eye, limb, and of the faculties of judgment. Provision should be made for a child to express and develop his own inner life through this spontaneous and pleas-

urable means. All writers on education have recognized the value of play. An excellent article by Mr. Johnson, on "Education by Plays and Games," is found in the *PEDAGOGICAL SEMINARY*, Vol. III, No. 1, while President Hall's "Story of a Sand Pile" is a classic.

READING, ETC.

Sec. XI. What studies, subjects, or lines of reading, or intellectual interest, have affected you for good or for bad, and how? Did mathematics deeply impress you with universal law, astronomy with sublimity and reverence, chemistry with the order of the infinitesimal, botany and zoölogy with the miraculous nature and persistence of life? Have you experienced special interest in any line of study, and, if so, can you tell what it is about it that attracts you, and how it has affected you for good? Can you describe or account for any aversion you have felt for any special study?

G., 20. "From literature I learned to love poetry for poetry's sake. Botany trained me to patience and perseverance as well as deftness in mounting. Psychology is helping me to break bad habits. Manual training has more bad moral influence than good physical training, as students in this subject will take any amount of help, and it will cause the sweetest tempered people to get mad enough to swear."

G., 19. "Astronomy, botany and zoölogy have strengthened my faith in the existence of a creator."

G., 19. "History has set before me many examples worthy of imitation. Psychology has taught me the wonderful powers of the human mind and made me realize more keenly my faults."

G., 20. "History has taught me much in character, and has set before me ideals. Physiology has taught me to care for my body."

G., 17. "At 10 years of age I took a great aversion to little children. The study of psychology has completely changed my dislike into fondness."

G., 20. "Science has opened to me the wonders of nature and revealed the hidden beauty that is strewn all around. Psychology has opened to me a new life, and both these studies have turned my thoughts to a higher power."

G., 18. "I abhor mathematics, possibly because I do not understand them, they are so vague and unreal."

G., 17. "Literature was to me the origin of higher motives. Geography created in me a more reverent attitude."

G., 18. "History has taught me loyalty to my country and given me an insight into the lives of noble men."

G., 18. "I like mathematics, because I can work until I get the result and can feel certain that I am right."

G., 17. "Literature has led me to carefully choose good books. Before studying it I would read anything."

G., 20. "Mechanical drawing has made me careful and painstaking in all that I do. Mathematics has shown me that careless work in one part will make trouble in another."

G., 20. "I detested physiology. I was fond of running, jumping and climbing. By this study I found out the positions of the bones. I was ever after afraid of dislocating some of them."

G., 19. "I had a most pronounced aversion to algebra. I think

this was in part due to my hatred of the teacher. Since I have had other teachers I can tolerate it."

G., 19. "The natural sciences have made me more reverent. Physiology and psychology made me skeptical in regard to religion."

G., 20. "The study of mathematics has added to my perseverance, neatness and exactness. Scientific cooking has increased my desire to do something for others. I had a special aversion to history. It was always regarded by me as a mass of unrelated facts without any bearing upon our lives. It appealed alone to the memory."

G., 18. "Psychology has broadened my ideas of life, made me think, helped me to self-control, and taught me to study myself and others. It has shown me the nobility of the teacher's calling and the preciousness of a soul."

G., 20. "I always enjoyed mathematics. I liked to solve the problems myself and felt as though I had conquered an enemy."

G., 19. "I have a warm interest in painting, drawing, singing and poetry, as they stir my nature to its very depths. I despise grammar, because it seems to be 'much ado about nothing.'"

G., 19. "As a child I despised history. It seemed dry and stupid. I think this was due to the way it was taught."

G., 17. "Drawing has made me more accurate, patient and self-controlled. Zoölogy has taught me that everything in its own way and language is telling of the wonder works of God. Manual training has made me more persevering, patient, and industrious; astronomy, more reverent; history, braver and more sympathetic; psychology, to live better, more observant and more lenient in condemning the actions of others, and has drawn me closer to children."

B., 20. "Reading dime novels and detective stories had a bad effect upon me. After reading some I got an old revolver and some cartridges and went to the woods to play some of the characters."

B., 18. "Manual training has taught me to be very careful and exact—or spoil the work. Mathematics has made me more rational. Psychology has increased my interest in children."

B., 20. "Mathematics has affected me for good. It has impressed me with universal law, and has cultivated in me the habit of exactness. I think it has affected my ethical nature through the necessity of having principles and following them. Zoölogy and botany have proven to me the goodness of the Creator. Grammar I do not like, because I think it was not well taught."

The following table shows the subjects which seemed to have exerted a good influence upon the student: Psychology 23. Literature 18. History 17. Geography 5. Mathematics 13. Botany 2. Zoölogy 2. Grammar 1. Drawing 1. Manual training 2. Mechanical drawing 1. Physiology 1.

The subjects that have had an evil effect, are: Manual training 4. Physiology 2. Psychology 1. Literature 1. Novel reading is also mentioned by 1.

In reply to the question: Did mathematics impress you with natural law? 24 G. and 2 B. answered *yes*, and 49 G. and 4 B. *no*.

Did astronomy, with sublimity and reverence? *yes*, 44 G., 2 B.; *no*, 2 G.

Did chemistry with the order of the infinitesimal? *Yes*, 17 G., 1 B. *No*, 3 G.

Did botany and zoölogy with the miraculous nature and persistence of life? *Yes*, 70 G., 5 B. *No*, 5 G.

The subjects in which special interest was taken, are: Mathematics 28. Literature 23. History 23. Psychology 20. Botany 16. Zoölogy 11. Geography 10. Drawing 5. Grammar 3. Music 3. Physics 3. Poetry 2. Manual Training 2. Physiology 1.

Special aversion was felt for the following subjects, and the reasons assigned, were: (1) They were poorly taught. (2) The learner had no gift along that line. Manual training 16. Mathematics 12. Grammar 11. History 10. Geography 5. Latin 5. Algebra 4. Rhetoric 3. Geometry 1. Spelling 1. Physiology 1. Drawing 1. Arithmetic 1.

FAVORITE BOOKS, PROVERBS, ETC.

Sec. XII. What are your favorite books, and why? Name a few in the order of the benefit you have received from them. Name the pieces, articles, poems, or proverbs, that have come home to you, and why and how. Name, also, any literature you have ever read or heard of, whether in the ancient classics or the modern newspaper, that seemed luminous on the general topics of this syllabus.

The favorite authors are: Longfellow 107. Lew Wallace 44. Bible 40. L. M. Alcott 40. Scott 40. Stowe 34. Dickens 34. Bryant 30. Tennyson 26. Bunyan 21. Whittier 15. Litton 13. Eliot 13. Roe 12. Shakespeare 11. Hawthorne 10. Thomas à Kempis 8. Irving 8. Pansy 8. Elsie Books 8. Emerson 6. Poe 6. Ingraham 6. Lyall 6. Holmes 6. Carey 6. MacDonald 6. Drummond 5. Kingsley 5. Thackeray 5. Grey 5. Black Beauty 5. Many other authors were mentioned but once or twice.

In making up the list of books those read by the boys are kept separate from those read by the girls.

The books reported by the girls are: Ben Hur 41. Bible 32. Psalm of Life 32. Uncle Tom's Cabin 27. Pilgrim's Progress 21. Evangeline 17. Thanatopsis 15. Little Women 11. David Copperfield 10. Myths and Fairy Tales 10. English History 9. Ancient History 9. Paul Revere's Ride 8. Ivanhoe 8. Last Days of Pompeii 8. Elsie Books 7. Chautauqua Series 7. Lucille 6. American History 6. Drummond's Essays 5. Black Beauty 5. Prince of the House of David 5. Romola 5. Bath Stones 5. Robinson Crusoe 4. Merchant of Venice 4. Elegy 4. Snowbound 4. Scarlet Letter 4. Vision of Sir Launfal 4. L. L. Fauntleroy, Paradise Lost, Biographies, Elaine 3, Excelsior, the Gates Ajar, Jane Eyre, Chambered Nautilus, St. Elmo, Old Curiosity Shop,

Hypatia, Titus, Tales of Two Cities, Dream Life, and 201 others, each of which is mentioned once or twice.

Books Read by the Boys. History 6. Adventures 6. E. P. Roe 6. Pilgrim's Progress 5. Uncle Tom's Cabin 4. The Bible 4. Scott 4. Psalm of Life 3. Lady of the Lake 3. Snowbound, Evangeline, Self-helps and Character, Dickens, Shakespeare, Tennyson, Ward's Biography of Washington, Biography of Lincoln, Dumas, O. W. Holmes, and Grey's Elegy (2 each). 67 others were reported, one each, several of which were biographies.

Of the 90 books reported by the 23 boys, 47 are also found among the list given by the girls. The divergence shows itself chiefly in the class of lighter reading. It is perhaps safe to predicate that in all the books having a moral or ethical content, there need be but little or no difference in the material furnished to the sexes until the time when self-consciousness has asserted itself, after which books suited to each should be chosen.

2nd. Children should have their *own* library and possess their *own* books.

3rd. The helpfulness of a book is largely relative, *i. e.*, books that have helped me may not help you, or books that have interested me at a certain period of life may not have any attraction for another at the same period of his life. Their usefulness depends greatly upon the psychic and emotional development of the individual, and upon the circumstances that surround him.

4th. I have no faith in the serviceableness of such books as one forces himself to read for the good they may do him. To aid in growth, in strength, in knowledge and in character, they must be spontaneously chosen.

5th. Goody-goody books are practically valueless, and much of the trash, that flouts its virtues in the eye of the reader, is fit only to companion with the yellow covered literature found in the stalls of every newsdealer. Fiction, provided it be true, is to be commended. Fables, fairy-tales, myths, Bible stories, cannot be too highly prized, as they are the very food on which the emotions are nourished, and it is high time for the teacher and the parent to recognize that the heart is larger than the head, and that the culture of the emotions is the true propædæutic to intellectual growth.

6th. Books should be provided along the line of the child's interest, provided such interest be neither immoral nor debasing. Some children have a great fondness for animals. Books treating of their history, habits and mythology should be furnished. Others are fond of tools, etc. An interest in reading may be aroused by appealing to this passion. Every child has special

tastes, which may be employed to develop a love for pure and ennobling literature.

PROVERBS AND ADAGES.

- Girls.* "If at first you don't succeed try, try again," 17.
 "Don't cross a bridge before you come to it," 16.
 "Do unto others as you would that they should do unto you," 14.
 See Matt. 7: 12. Luke 6: 31.
 "Every cloud has a silver lining," 13.
 "A stitch in time saves nine," 12.
 "The Lord helps those who help themselves," 11.
 "It is darkest just before the dawn," 8.
 "It's a long lane that has no turning," 8.
 "Never trouble trouble 'till trouble troubles you," 7.
 "Never put off until to-morrow what you can do to-day," 6.
 "Whatever is worth doing at all is worth doing well," 6.
 "What can't be cured must be endured," 5.
 "Where there's a will there's a way," 5.
 "All is not gold that glitters," 5.
 "This above all to thine own self be true,
 And it must follow as the night the day,
 Thou canst not then be false to any man," 5.
 "Be good sweet maid and let who will be clever," 3.

Two Each.

- "As a man thinketh in his heart so is he."
 "Build thee more stately mansions, oh my soul! as the swift seasons roll."
 "Life is a sheet of paper white,
 Whereon each one of us may write
 His word or two and then comes night.
 Greatly begin, tho' thou hast time
 But for one line be that sublime,
 Not failure, but low aim is crime."
 "The quality of mercy is not strained."
 "He that ruleth his spirit is mightier than he that taketh a city."
 "So live that when thy summons come," etc.
 "Speak gently, it is better far to rule by love than fear."
 "Our greatest glory consists not in never failing but in rising every time we fail."
 "I know not what the future hath.
 Of marvel or surprise,
 Assured alone that life and death
 His mercy underlies."
 "Breathes there a man with soul so dead
 Who never to himself hath said,
 This is my own, my native land."
 "Oh many a shaft at random sent
 Finds mark the archer little meant;
 And many a word at random spoken
 May soothe, or wound, a heart that's broken."
 "A good name is rather to be chosen than great riches."
 "A bird in the hand is worth two in the bush."
 "Do not borrow trouble."
 "The heights by great men reached and kept,
 Were not attained by sudden flights,
 But they while their companions slept
 Were toiling upward in the night."

"Do not look for wrong and evil,
 You will find them if you do;
 As you measure for your neighbor
 He will measure back to you."
 "Look for goodness, look for gladness,
 You will find them all the while
 As you bring a smiling visage
 Towards the glass—you'll meet a smile."

One Each.

"No man doth well, but God hath part in him."
 "Our deeds determine us as much as we determine our deeds."
 "You are young and have the world before you; stoop as you go
 through it, and you will miss many a hard thump."
 "Where ignorance is bliss 't is folly to be wise."
 "Be not like stream that brawls
 Loud with shallow waterfalls,
 But in quiet self-control
 Link together soul and soul."
 "I pray the prayer of Plato old,
 God make thee beautiful within,
 And let thine eyes the good behold
 In everything save sin."
 "Little minds are tamed and subdued by misfortune, but great minds
 rise above it."
 "The fittest place where man can die is where he dies for man."
 "What thou knowest not now, thou shalt know hereafter."
 "Suffer little children to come unto me, and forbid them not, for of
 such is the kingdom of God."
 "Order is Heaven's first law."
 "Holiness becometh thine house, O Lord, for ever."
 "Within the oyster shell uncouth
 The purest gem may hide,
 And oft you'll find a heart of truth
 Within a rough outside."
 "Under all circumstances keep an even mind."
 "Variety is the very spice of life that gives it all its flavor."
 "Make hay while the sun shines."
 "Delay no time, delay has dangerous ends."
 "There's many a slip 'twixt the cup and the lip."
 "Our prayers and God's mercies are like two buckets in a well, while
 one ascends the other descends."
 "All actual heroes are essential men, and all men possible heroes."
 "What we call time enough always proves little enough."
 "After wits are dearly bought, so let thy fore-wit guide thy thought."
 "Sweet are the uses of adversity."
 "Who would be for themselves must strike the blow."
 "To live in hearts we leave behind is not to die."
 "Full many a gem of purest ray serene
 The dark unfathomed caves of ocean bear;
 Full many a flower is born to blush unseen
 And waste its sweetness on the desert air."
 "For every evil under the sun
 There is a remedy or there is none;
 If there is one try to find it,
 If there is none, never mind it."
 "The Lord God is a sun and shield; the Lord will give grace and

glory, and no good thing will he withhold from those who walk uprightly."

"Heaven's gates are not so highly arched as king's palaces; they that enter there must go upon their knees."

"Fear God, and when you go men shall think they walk in hallowed cathedrals."

"Dare to say no. To refuse to do a bad thing is to do a good one."

"The thing most specious cannot stand the true,
Who would appear clean must be clean all through."

"One and God make a majority."

"A rolling stone gathers no moss."

"Honesty is the best policy."

"Whatsoever you do, do it heartily as unto the Lord, and not unto men."

"Look before you leap."

"Now is the appointed time."

"To him that hath shall be given, and from him that hath not shall be taken even that which he seemeth to have."

"If wisdom's ways you wisely seek

Five things observe with care,

Of whom you speak, to whom you speak,

And how, and when and where."

"Kind words never die."

"Curses like chickens come home to roost."

"How far that little candle throws his beams,

So shines a good deed in a naughty world."

"Cleanliness is next to godliness."

"Honor and shame from no condition rise,

Act well your part, there all the honor lies."

"Every day should be passed as if it were to be our last."

"Think twice before you speak once."

"A soft answer turneth away wrath."

"It is more blessed to give than to receive."

"Not how much, but how well."

"A stitch in time saves nine."

"Beauty is only skin deep."

"Patience is a virtue."

"Don't cry over spilt milk."

"Do thy duty that is best,

Leave unto the Lord the rest."

"Every shadow is edged with sunshine."

"The only way to have a friend is to be one."

"Of all sad words of tongue or pen,

The saddest are these: 'It might have been.'"

"Work as though you would live forever,

Live as though you'd die to-day."

"The best part of our life is that which teaches us where knowledge leaves off and ignorance begins."

"Do you court learning's prize,

Climb its heights and seize it;

In ourselves our fortune lies,

Life is what we make it."

"Into each life some rain must fall,

Some days must be dark and dreary."

"Coming events cast their shadows before."

"Kind hearts are more than coronets."

"Somewhere above us, in elysian ether,

Waits the fulfillment of our dearest dreams."

- "When adverse winds and waves arise,
 And in my heart despondence sighs,
 When life her throng of care reveals,
 And weakness o'er my spirit steals,
 Grateful, I hear the kind decree:
 That 'As my days my strength shall be.'"
 "There is no rest for the wicked."
 "New brooms sweep clean."
 "All things come to those who wait."
 "Write your injustices in sand, your benefits in marble."
 "God helps those who help themselves."
 "The waiting time is the hardest time of all."
 "Life's sorrows fluctuate, God's love does not,
 And his love is unchanged when it changes our lot."
 "All things work together for good to those that love God."
 "Truth crushed to earth shall rise again."
 "Work while you work, play while you play."
 "Patience, industry and perseverance overcome all difficulties."
 "Never buy a thing that's cheap, it may be dear to you."
 "'Tis not the thing that you do, dears,
 'Tis the things you leave undone,
 That cause the bitter heartaches
 At the setting of the sun."
 "Boys flying kites haul in their white winged birds,
 But you can't do it when you're flying words."
 "Thoughts unexpressed may often fall back dead,
 But God himself can't kill them when they're said."
 "To do the thing you know you ought to do, at the time when you
 ought to do it, whether you like it or not, this will bring the joy of
 doing, this will insure success."
 "Forgetting those things which are behind, and reaching forth unto
 those things which are before." (Phil. 3: 13.)
 "Do your best and leave the rest."
 "Our to-days and yesterdays are the blocks with which we build."
 "The man who seeks one thing in life, and but one, may hope to
 achieve it before life be done. But he who seeks all things wherever
 he goes, only reaps from the hopes, which around him he sows, a
 harvest of barren regrets."
 "Tasks in hours of insight willed, may be through days of gloom
 fulfilled."
 "If you make a mistake don't look at it long, take the reason of the
 thing into your mind and then look forward."
 "Profit by the mistakes of others that you may never know their sor-
 row."
 "What is really best for us lies always within our reach, though
 often overlooked."
 "We pass from glory to the grave."
 "The penalty of being behind time means so much advantage and
 opportunity lost."
 "Self-reverence, self-knowledge, self-control, these three alone lead
 man to sovereign power."
 "Any life that is worth living must be a struggle, a swimming not
 with, but against the current."
 "In order to be loved you must be lovable."
 "There is no failure except in no longer trying."
 "Take no thought for the morrow."
 "Who never breaks a rule
 Is little better than a fool."

"Everything has a place for itself."

"Love thy neighbor as thyself."

"So nigh is grandeur to our dust,

So near is God to man

When duty whispers low thou must,

The youth replies 'I can.'"

"No matter how much you may want to do a thing, if it is your duty not to, you must obey duty rather than pleasure."

"Have you thought what you are doing, have you thought where this will end."

"Whatever you try to do, do it with all your might."

"What man hath done man can do."

"Don't count your chickens before they are hatched."

"We learn not for school but for life."

"To seek is better than to gain,

The fond hope dies as we attain,

Life's faintest things are those which seem,

The best are those of which we dream."

"Be grateful for the gifts that you possess, nor deem a rival's merits make yours less."

"It is better to hope than despair,

It is better to trust than to doubt,

And the soul that looks upward in prayer

Has a light that can never go out."

"If we spend the time in improving the present we do in regretting the past, the future would not steal upon us unawares."

"I slept and dreamt that life was beauty,

I waked and found that life is duty."

"Are there voices in the valley

Lying near the heavenly gate?

When it opens do the harp-strings,

Touched within reverberate?

When like shooting stars, the angels

To your couch at nightfall go,

Are their swift wings heard to rustle?

Tell me? for you know."

"There is a reaper whose name is Death."

"I shot an arrow in the air,

It fell to earth, I know not where."

"Do not let us lie at all. Do not think of one falsity as harmless, another as slight, and another as unintentional. Cast them all aside. They may be light and accidental, but they are ugly soot from the smoke of the pit for all that."

"An epitaph in a country church yard."

"The Psalm of Life."

"Oh why should the spirit of mortals be proud."

Boys. "Lost, yesterday, somewhere between sunrise and sunset, two golden hours, each set with sixty diamond minutes. No reward is offered for they are gone forever."

"Anything that is worth doing is worth doing well."

"There is no time like the present,

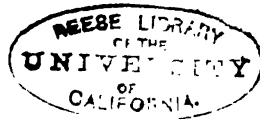
The future is not ours;

If we would make our lives sublime

Improve the present hours."

"Little boy with rosy cheeks and auburn hair,

Listen a moment while I say: Do not, do not swear."



"The more haste the less speed."
"Make hay while the sun shines."
"A penny saved is a penny earned."
"A place for everything and everything in its place."
"Behind the clouds the sun is still shining."
"Take care of the pennies and the pounds will take care of themselves."
"I hold it truth with him who sings
To one clear harp in divers tones,
That men may climb on stepping stones
Of their dead selves to higher things."
"Whatever is, is right."
"Experience keeps a dear school, but fools will learn in no other."
"Life is a sheet of paper white
On which each one of us may write
His word or two, and then comes night."
"Nor deem the irrevocable past
As wholly wasted, wholly vain,
If rising on its wrecks at last
To something nobler we attain."
"What man has done man can do."
"Speak out in acts, the time for words has passed and deeds alone suffice."
"Procrastination is the thief of time."
"Actions speak louder than words."
"Be true to your word, your work and your friend."
"You never miss the water till the well runs dry."
"If the shoe fits, put it on (wear it)."
"Fine feathers don't make fine birds."
"If ought good thou canst not say
Of thy neighbor, foe or friend,
Take thou then the silent way,
Lest by words thou shouldst offend."
"Better late than never, but better never late."
"The early bird catches the worm."
"Deeds are fruits, words are but leaves."
"The greatest conqueror is he who conquers himself."
"Face the worst and make the best of it."
"You influence every person you meet."
"Never put off till to-morrow what you can do to-day."
"Still waters run deep."
"A bad penny always returns."
"Birds of a feather flock together."
"Hurry makes waste."
"Think much, speak little, look before you leap."
"Vessels large may venture more,
But little boats should keep near shore."
"Empty your purse into your head and no one can get it from you."
"Straws show which way the wind blows."
"Do the next thing."
"To tell the truth is to make life all golden."

One cannot but be impressed by the great rôle proverbial sayings have played in the moral and psychic life of those reporting. This may be due more to the fact that they are the immediate descendants of that people whose mental nourishment was strongly seasoned with Franklin's "Poor Richard's

Almanac," but be that as it may, the question arises, are we not losing a very potent agency by refusing to employ the rich gnomonic literature that has been so formative in all the early peoples?

While it would take volumes to set forth all the virtues of proverbs and fables as seen in the life and literature of more primitive times, a few men of prominence have clothed their views in such brief form, that they will bear transcription.

Aristotle says: "Proverbs are remnants, which on account of their shortness and correctness, have been saved from the wreck and ruin of ancient philosophy." Agricola declares them to be "short sentences into which, as in rules, the ancients have compressed life."

Thomas Fuller defines a proverb as "much matter decocted into few words." James Howell, "a great deal of weight wrapt up in little."

The modern definition is "the wisdom of many and the wit of one."

D'Israeli declares: "centuries have not worm-eaten the solidity of this ancient furniture of the mind."

Since the advent of the printing press, and "the school-master has been let loose upon us, every artisan has become a philosopher and a perfectibilian. The worthy catechumen of the new order does not but despise those saws, and makes no more use of those epigrammatic condensations of applicable wisdom, which have long served as a sort of moral code of direction to mankind."¹ In the school-room, or the home no longer is a truth pointed, or a moral lesson clinched by an apothegm. Rationalism and science are no more fit salve for all the evils of life, than is natural history a guide to the farmer in grazing his cattle, or conic sections to the tailor, or chemical affinities to the cook. What the world wants is the truth of experience in an accessible form for the vulgar mind.

The literature of every nation is rich in them. Their origin antedates the authentic history of language. Greece, however, is the country to which modern nations are indebted for much of this lore. Coming in contact with all the eastern peoples, subduing most and inflicting her language and customs upon them, she readily became the treasure house for these philosophic relics. Her philosophers, sophists, dramatists, prose and verse writers have not only employed, but also coined them. Latin writers used them profusely, and Rome has handed them down to her modern descendants as one of the most precious of pedagogic gifts. "For the working classes of a country, they are quaint truisms, sanctioned by extensive experience,

¹ Anomy, *Fraser Mag.*

easily comprehended and circulating readily from mouth to mouth, which, when they continue in use, have great pith and moral influence in assisting a laboring population to just notions of life and relative duties and go further towards the inculcation of sound and applicable sense, than all the pseudo-learning, that, by any process, can ever be driven into the head of a man who has to toil for bread. More good can be done by inoculating the common people of any country with common sense principles and infusing into their minds such fragments of pithy moralizing generally contained in national proverbs, as shall give them habits of reflection and forethought." (*Fraser Mag.*)

Previous to the time of book-making, learning passed from mouth to mouth. The most convenient form was the epigram, hence the great rôle of the proverb in forming the thought and life of all the early nations. "By them, they were reverently received into ordinary parlance, as the condensed wisdom of ages, and the verdicts of hoary-headed experience, and when once received, they governed like Holy Writ." (F. R. Goulding, *Appleton's Journal*.)

So great has been their influence in moulding the national mind, that to know a nation's proverbs is to know its psychic state and moral character. The proverbs of England, as a whole, are stamped with the aim of attaining the art of living wisely, prosperously and happily. Strong marks of the Englishman's doggedness and surliness appear. How the calculating circumspection of the Scotch is brought to the fore! How the pride and grave humor of the Spaniard, together with his tendency to sneer at womanhood and virtue, are discernable! What jealousy and shrewdness and revenge is seen in those of Italy! What conceit and gasconading propensity, what wit and humor in the French! If proverbs have exerted such a powerful influence in the development of the nation soul, or the race soul, what efficient means may they not be in the hands of the instructor, when used in connection with other moral agencies? Are we wise in neglecting to make a much more extended use of them than we do?

We must not think them beneath us. The learned Erasmus in Holland, and Guicardini in Italy, collected and published adages. The great Bacon published apothegms new and old. It is believed Aristotle himself as well as Solomon wrote, or collected proverbs. Bacon says Cicero did. So, too, Plutarch and Stoboeus, of more modern times. Alfred the Great, led the way in England, and Spelman says: "by this means he was considerably assisted in ameliorating and raising the moral character of our ancestors." Much of the teaching of the Druids to the early Britons was proverbial, while the maxims of Confucius and Zoroaster exhibit the same nature. The Tal-

mud is pregnant with them, the Bible teems therewith, while the strength, and beauty, and directness of much of Christ's teaching is due, in part at least, to its proverbial form.

Though proverbs may be the voice of experience, the fiat of the wise and prudent, there is a limit to their use, and it would be very unwise to give an unqualified approval of wholesale paracemiology. The teaching of many adages are so contradictory of the elements of true character that to introduce them into the sphere of the every day life of the ordinary individual would be moral suicide, as the following witness: "The world owes a man a living." "All stratagems are fair in love and war." "Charity begins at home." "Self-preservation is the first law of nature." "What was once a vice is now a custom." One may as well have the game as the name." "Guilt is always timid." "People like to be deceived." "He laughs best who laughs last." It is a significant fact that those European nations that exhibit the most moral degeneracy, possess the greatest number of proverbs that are malicious and vile, while on the other hand that people, whose very name has become a synonym for virtue and morality, has a language pregnant with sayings, teaching the highest conceptions of life and its duties and privileges.

Though the languages of all peoples are strewn with these mischievous sayings, yet the proverbial harvest is so rich, that the parent and the pedagogue can have no trouble in glean- ing the choicest seeds therefrom, which may be dropt into the soil of the human heart, from which there may grow the rich fruitage of human character.

To those interested, the following references may be helpful: *Parœmiographic Græci*. Göttingen, 1839-51. Proverbs chiefly taken from the *Adagia* of Erasmus. Robt. Bland, London, 1814. *A Handbook of Proverbs*. H. G. Bohn, London, 1857. *A Polyglot of Foreign Proverbs, with index*. H. G. Bohn, 1857. *Old Sayed Saws and Adages*. James Howell, London, 1659. *Dictionary of Spanish Proverbs*. John Collins, London, 1823. *Quelque Six Mille Proverbs*, P. Ch. Cahier, Paris, 1836. *Petite Encyclopedie des Proverbs Français*. Hilaire le Gais, Paris, 1860. *Arabic Proverbs, translated and explained*. J. L. Burckhardt, London, 1830. *Wit and Wisdom from West Africa*. Capt. Burton, London, 1865. *Scotch Proverbs*. Allan Ramsay, Edinburgh, 1797. *Mavor's Proverbs, alphabetically arranged*. London, 1804. *Select Proverbs of all Nations*. Thos. Fielding, London, 1821. *Proverbs of all Nations, compared and explained and illustrated*. Walter R. Riely, London, 1861. *Proverbs and their Lessons*. R. C. French, London, 1857.

In ethical worth none compare with the unopened mine of the proverbial lore of the Hebrews. See Bible, Apocryphal Books of Wisdom, of Solomon, Ecclesiasticus, the Pirye Abthoth, the Mishna and the Talmud.

GENERAL CONCLUSIONS.

It would be the height of pedantry to build any elaborate system of moral pedagogy on such a limited supply of data. Neither would it be wise to indulge in any metaphysical speculations, as the material is at best one-sided. Before any satisfactory conclusions can be drawn, a study must be made of persons whose conduct might be designated as moral laxity, a study similar to the one presented by Mr. Geo. Dawson in a previous number of the PEDAGOGICAL SEMINARY.¹ It is hoped that this work may be but the beginning of a more extended study of the subject of moral education, a question fraught with such interest, and so closely connected with the welfare of the race, as well as with that of the individual.

Five important facts, or principles, are clearly suggested by the above material.

1st. Moral action, in early period of life, and even in early manhood and womanhood, is a matter of imitation and suggestion rather than of intellect. The great rôle played by suggestion has been most clearly shown by Mr. M. H. Small in an excellent paper on this subject.¹

2nd. Though children are born with the sense of the *oughtness* out of which the moral nature grows, yet this would avail nothing, did not parents furnish the growing boy, or girl, with clear conceptions of the moral content of life, *i. e.*, instruct him, or her, thoroughly in all the principles that teach duty to God and man. (See Sections IV, and VIII.)

3rd. It is very evident that much of the moral excellence of the character of many of those reporting is due, in large measure, to the hereditary influence that gathered round them at their birth. Blood does count for something, with a vengeance.

The work of Mr. Dawson, above referred to, goes to show that, of the 52 moral delinquents personally studied by him, the most of them "had parents that were intemperate, improvident, or criminal." When bad environment had joined hands with this bad heredity, nothing short of a miracle could stay the influences that were driving these same boys and girls to the reformatories.

The point I wish to make is, (a) The heredity of the child should be as carefully studied as the strain of the cattle with which the farmer would stock his acres, and any physical weakness, or tendency to evil in his ancestry should be made known to him in order that he may be on his guard, lest the enemy, that

¹ A study in Youthful Degeneracy. PEDAGOGICAL SEMINARY, Vol. IV, No. 2, p. 221.

¹ The Suggestibility of Children. PEDAGOGICAL SEMINARY, Vol. IV, No. 2.

lurks in ambuscade in his very veins, may attack him unawares ;
(b) The forces of environment should be so controlled, as to destroy, as far as possible, any hereditary taint, and, at the same time, strengthen and develop any predispositions to moral rectitude and manliness of life.

4th. The supreme aim of the parent and the teacher should be to establish definite, strong, correct habits. True morality consists as much in *doing* as in *being*. Habits are the induced states of *mind*, or *body*, by means of which the latent power is transformed into an effective process, and becomes active rather than passive. Their importance is recognized in the mechanical world. The intellectual and moral spheres have indeed been slow to acknowledge their worth. Manual habits enable the mechanic to produce the finished article, moral habits, the boy or girl to maintain a blameless character under every circumstance of life. Sound knowledge of moral truth is good, but sound habits of moral action are better.

It is perhaps universally true that parents have devoted themselves assiduously to the instruction of their sons and daughters rather than to the establishment of habits. The natural and most effective means has thus been neglected, and the true development perverted.

5th. The last stage is the purification of the child's *taste*. All children are born with impulses and desires, which are capable of unlimited education. In the early years of youth, they are the controlling factors of the child. Intelligence and conscience assert their sway later. Not only are there natural tastes but there are acquired ones. The latter are much more numerous, and are the direct production of environment. According as one's tastes are pure and noble, so will be the life. Much can be done to surround the growing soul with such influences as will make for strong, vigorous, noble manhood or womanhood.

6th. For the evolution of the ethical consciousness nothing is perhaps better than the arousing of the religious sentiments.

7th. He who would lead, must walk in the way himself.

8th. Love and faith are worth more than knowledge, or specific forms of government.

So much evidence has been given in the replies quoted above as to the modes of procedure to accomplish these states, that it would be only a needless repetition to rehearse them.

It is hoped that this work may be suggestive of further research, so that in the near future there may be a "science of moral education."

I wish to acknowledge my indebtedness to Dr. Hall, who wrote the syllabus and gave me the returns, and from whom I received many valuable suggestions in working up the material, and for assistance given me when revising the MS.

SOME MENTAL AUTOMATISMS.

By E. H. LINDLEY AND G. E. PARTRIDGE, Clark University.

I.

The following study of mental automatisms is based upon returns to a syllabus issued in December, 1895. The topic was suggested by President Hall, who had, indeed, already gathered many facts bearing upon it. The section of the syllabus relating to mental automatisms was as follows:

Describe cases in which you have found yourself more or less automatically (a) trying to step on or avoid cracks in the floor or sidewalk, etc., especially while consciously doing or thinking of other things; (b) striving to count either figures in a pattern, posts fitting past the window of a moving car, the beat of wheels, or other noises or objects; (c) grouping uniformly recurring shapes, as in wall paper into diamond shaped patterns, squares, or other symmetrical forms; (d) bisecting lines or rows of similar things, or figures, or trying to find a middle point, or a third or quarter point, etc.

The returns have yielded 495 usable cases: 137 of avoiding, 155 of counting, 126 of grouping, and 77 of bisecting. Of all who answered, 81.3% testified to having automatisms of counting, 77.1% of avoiding, 66.3% of grouping, and 40.6% of bisecting.

A. AVOIDING.

The following are typical cases:

1. F., 17. Ever since I was eight years old I remember avoiding or stepping on cracks. When the spaces between the cracks were large, I avoided them, but when small I always stepped on them. When walking along the platform at the depot, or when on a board walk, I find myself unconsciously doing either one, more often avoiding them.

2. F., 18. From 10 years until a year or two ago I often found myself avoiding the cracks in the sidewalk unconsciously. I often noticed that when my foot was to come on the crack I took a longer step. I used to get angry with myself for doing it.

3. M., 26. I almost invariably counted the boards and stepped carefully on each when going from the house to the pump, when young. I believe it was always consciously performed, though it may have begun, and I believe generally did begin, without conscious motive or wish.

4. F. More particularly in my teens and early twenties I remember trying to walk so as to avoid certain regular lines. I would consciously do this without any apparent motive but a feeling of pleasure, and would later find I had continued unconsciously in the same way.

5. F., 17. I often find myself unconsciously stepping on cracks in

the sidewalk. A friend remarked about always being unable to keep step with me.

6. M., 23. While very angry and pacing up and down the room I found myself automatically stepping on the seams of the carpet.

7. F., 17. As far back as I can remember I have avoided cracks unconsciously when walking on the sidewalk. I began to avoid them because my cousin told me it killed ants if I stepped on cracks. It is only when deep in thought that I find myself avoiding them.

8. F., 18. Often when worried or ill, and when thinking, I find myself pacing the floor, stepping from one bunch of flowers in the carpet to another, or, if on the porch, I step between the cracks.

9. F., 18. I have found myself trying to avoid cracks between flagstones in the pavement, while thinking of something entirely different. Two or three years ago it was more frequent than at present.

In the list of objects which were avoided, cracks in the sidewalk lead; then come cracks in the floor, stones in sidewalk, designs and seams of carpet, shadows of electric light, bars of sunlight, gravel stones, waterways, vacant places, door sills, and registers.

Objects stepped on were cracks in the sidewalk, cracks in the floor, oil cloth and carpet, dry bricks, bricks of different shades, boards, sunbeams, knots, furrows, nail heads.

Forty-six speak of avoiding things while the mind is absorbed in something else. Forty-five "found themselves" doing this; did it unconsciously, 18; while talking, 17; called to the fact, 5; purposely, 5.

The states of mind which these automatisms accompany can best be shown by quoting cases.

10. F., 13. I was stopped by my friends, who were greatly amused at what I was doing, of which I was entirely unconscious, my mind having been occupied in trying to solve a difficult problem. My awkward steps were made by trying to step on certain openings between the flagstones of the walk.

11. M., 17. I have been told that when walking over a certain stretch of sidewalk, I took two steps to each section of the walk, careful not to step on a crack, often walking out of step to avoid them.

12. M., 23. Walking with a friend. After a while he said, "What makes you walk so unevenly? Sometimes you take long steps and then again short ones." I had unconsciously been walking so as not to step on the cracks between the flagstones.

13. F., 17. I received a letter from home announcing the illness of my father. I went out for a walk with a friend. My friend said, "Are you afraid to step on the cracks in the pavement? You have been stepping over them carefully ever since you came out."

In other cases the avoiding is carried on less automatically, as:

14. F., 21. When on the street, if I come to a flagstone pavement, I immediately commence to avoid stepping on the cracks. If with a companion, I keep on talking but I am conscious all the while that I am stepping over cracks. It is only flagstone pavements that affect me in this way.

In other cases the avoiding forms the chief part of the mental

content, and is carried on in moments of distraction or as an amusement, *e. g.*:

15. F., 17. About two years ago I had a strange fancy for avoiding cracks in pavements. I cannot tell how it originated, but it seemed as if I must not step on them. At first I did it voluntarily, but I soon found myself doing it when I was not thinking about it at all.

16. M., 29. I always had a tendency to avoid cracks in the sidewalk, but usually it was a conscious effort. I have felt satisfied if I stepped on no more than one in seven or eight cracks.

This suggests the cases in which this impulse is worked into games of poison, etc., in which there is often a feeling of danger connected with stepping on cracks. In some cases the automatisms become so insistent and the feeling element so strong, that they must be regarded as morbid.

17. F., 21. I often found myself avoiding cracks. It seemed as though I might stumble if I stepped on them, or that I might get hurt in some way.

18. F., 23. I feel a keen displeasure if I happen to step on a crack. If one is absolutely unavoidable I try to set the hollow of my foot upon it, never the ball.

19. F., 20. I imagined there was a severe penalty attached if I should step on the cracks of the floor.

20. M., 28. It is almost painful to find that I cannot avoid stepping on a crack.

21. M., 17. If I step on a crack I feel as if something will surely happen, either to me or some of the family.

22. F., 7. I was walking with her one day; she had hold of my hand. Suddenly she said, "Oh, that crack!" went back, stepped over two or three other cracks until she came to that one, and then stepped over it. She says she doesn't like to walk with her mother because she will not allow her to step over cracks.

23. F., 20. I have often tried to avoid cracks in a floor or sidewalk. I can remember doing this and imagining there was a severe penalty attached if I should step on them.

24. M., 17. I avoid cracks; something in them suggests danger.

25. F. It seemed as though I should fall if I did not keep on a crack.

26. M., 17. I unconsciously avoid the seams of a carpet; I cannot tell why, but I never feel right if I accidentally step on a seam. I think nothing about it unless I step on one, and then I feel as if something will surely happen, either to me or to some of the family.

27. F., 19. When small I had a feeling that I must not step on cracks; I never knew why. I remember walking over a long bridge at home, but always stepping over the cracks. We had a plank walk leading from the house to the barn. I always stepped over the joinings of the planks. Now I often find when going up the plank walk and thinking of something, that I step over the cracks.

28. M., 28. I never allow myself to step on a crack if it can be avoided. Even on a brick walk it is almost painful to find the width of two bricks too narrow to place one foot upon, so as to escape stepping on the cracks. I am always reasoning that the crack between the two bricks comes in a place where the shoe does not touch the walk. If they are not wide enough, I notice I never allow the toe of the shoe which I can see to cross the crack, but always the heel which is out of sight.

The following cases illustrate the manner in which this tendency to avoid cracks has been utilized in games, and suggests the origin of the folk-lore and superstition connected with this habit.

29. F., 17. I used to avoid cracks, as I was told I would have bad luck if I stepped on them.

30. F., 18. I avoided cracks because I was told if I stepped on a crack it would break my mother's back.

31. F., 18. We school girls used to avoid cracks, because we said if we did n't, we would miss our lessons.

32. F., 18. Children told me if I stepped on a crack I would miss my lessons, but if I did n't, I would find something at the end of the journey.

33. F., 19. I had often been told that I was to have company if I did n't step on the cracks in the pavement. I was always very careful, especially if expecting some one, not to step on the cracks.

34. M., 16. We used to say you would be poisoned if you stepped on a crack.

35. F., 18. As children we used to play poison, in which any one who stepped on a crack was poisoned.

B. COUNTING.

36. F., 17. Almost every Sunday in church I sit where I can see the larger part of the chancel. I cannot help counting the small posts in the railing that surrounds the chancel.

I was walking with a friend, she noticed that my eyes were fixed on a wagon wheel. She called me to consciousness of the fact that I had been counting the spokes.

37. F., 18. Very often, when walking alone and thinking intently, I find myself counting my steps. When lonesome or ill I cannot avoid counting the ticks of the clock. When on the cars, thinking, I often find myself counting the telegraph poles.

38. F. Everything that comes within my field of vision I count, whether it be fence rails, tacks, nails in wood, people, telegraph poles, bridges, houses, in fact everything. I like to count people in pictures, in parades, in drills, in school. I astonished the people in a little town where I was staying, by running out every day, when the mill bell rang, to count the people. I even went so far as to hold a light up at the window at night, so that I could count the people passing. I count the keys in a piano board, tassels on the drapery, the holes or the brass-headed nails on the bottoms of chairs, the buttons on dresses, the birds on the telegraph wires. I began the habit when I was about four years old. At that time I counted only the letters in words.

39. F., 18. As I ride on the train daily to school, I find myself trying to count the palings in the fences or the cars of a passing train.

40. F., 18. When I hear music, hammering, or beating of any kind, it always forms a rhythm: one, two, one—three; one—four, etc.

41. F., 22. I count the ticks of the clock continually.

42. F., 19. While studying my lessons I have found myself counting the different patterns of squares in the table cover. There are small squares within larger squares. I first counted the large squares and then the small ones.

When ill I have often counted the number of certain figures which it took to go across one breadth of wall paper. In the same way I have counted figures in the carpet, and the number of stripes in a rag carpet.

43. F., 23. When riding in the cars I often find myself counting telegraph poles, and yet thinking of something else.

While sitting in a room where there is a clock, before I realize it I will be counting the ticks in a rhythmic form: one, two—one, two, etc.

44. F., 17. Once while listening to a lecture, I was counting the stars in the flag over the stage.

45. F., 18. Often when sitting where I can see a house, I find myself counting over and over the weather boards on the side, sometimes I begin at the top, and sometimes at the bottom.

46. F., 17. In a certain church there are a pair of large glass doors which divide two rooms. Whenever I look at these I immediately begin counting the panes.

47. F., 17. I often become nervous and excited because I cannot count the number of gas jets in a chandelier at church; I cannot remember where I begin to count. I have counted the carved figures in the head-board of my bedstead, bunches of flowers in the carpet, books on a long shelf, bricks in a sidewalk, rows of seats in church, stars in papers.

48. F., 21. When travelling I try to count the telegraph poles, or the posts of the fences. If I miss one it seems to bother me, and I feel as though I must go back to it. Sometimes I find myself leaning forward, so as to catch a glimpse, if possible, of the one I am losing. I often find myself counting the ticks of a clock thus: one, two; one, two, etc.

The objects counted, given in the order of frequency of mention, are:

Telephone and telegraph poles, 152; posts, 88; designs in wall paper, 71; beat of wheels, 49; tick of clock, 39; steps, 32; bell strokes, 31; stairs, 25; organ pipes, 24; trees, 24; spokes of wheels, 23; cars, 17; houses, 15; hoof-beats, 14; peoples, 14; revolution of wheels, 11; figures in dress, 11; and the following less than ten times each: designs in carpet, designs in woodwork, rows of objects, boards in walk, railway ties, seats, wainscoting boards, bars in fence, panes of glass, engine puffs, designs in glass, mile posts, time (in music), letters (in signs, words, etc.), fingers, cracks in wall, clock strokes, bridges, signs, buttons in clothing, radiator pipes, holes in chairs, gas or electric lights, slats in blinds, fence corners, books on shelves, carriages, windows, sound of saw, lines of words, rain drops, boards in sidewalk, isinglass, words, strokes of hammer, rounds in chair, boards in floor, splices in belt, designs in fancy work, objects on mantel piece, pump strokes, stitches, rails in fence, telegraph wires, stones in a walk, birds in a flock, teams, sides and angles in geometrical figures, splash of oars, designs in table cloth, words spoken, joints of rails, or a bridge, syllables in sentence, rings on curtain poles, and 20 others given once or twice each, making a total of 95 different objects counted.

The total number of objects counted is 412. Of these 79.4% were objects in the visual field, 19% sounds, 1.6% miscellaneous.

Counting seems to be carried on more frequently as a distraction than avoiding, as is shown by the following summary, showing the circumstances most favorable to counting:

Riding in cars, 67; in church, 33; walking, 30; thinking,

9; in bed, 8; sitting still, 6; alone, 6; ill, 6; and 27 others mentioned less than five times each, nearly all states of listlessness, fatigue, etc.

Counting thus seems to be more closely related to the reverie group, than to the effort automatisms.

The following extracts from cases will show the different degrees of automatism of this group.

49. M., 17. Great habit, after hard day's work, while walking alone, of counting my steps. Thus I have counted the steps I have to take in walking one particular mile more than 200 times. I cannot help counting clock or bell strokes.

50. M., 28. While riding in the cars I sometimes find myself counting away a mile at a time. This occurs only when I am half asleep.

51. M., 19. As I am sitting in a quiet room, especially in church, I will count everything in range of my eyes. I often spend more energy on this than on my work.

52. M., 34. Last year I often found myself counting figures in the wall paper, objects in a picture, etc. I acquired this habit in part from trying to see under how small a visual angle objects can be counted. The habit remained for some time troublesome and then disappeared.

Sometimes, however, the counting seems to be carried on simultaneously with a train of active thought, *e. g.* :

53. F., 17. In the cars, when not interested in a conversation but thinking of something else, I count the telegraph poles.

54. F., 19. When out walking and thinking, I always count my footsteps.

55. F., 17. My mind was full of a lesson at the same time I was counting things on the wall.

It is impossible, of course, to determine whether, in many cases, the automatic action begins when the attention is relaxed, or whether it has been carried on under the threshold of consciousness, or so completely automatized as to escape observation altogether, since the mental automatisms are obviously, unlike the motor automatisms, closed to observation from without.

55. M., 25. While lying in bed in the morning thinking of a problem, the attention was distracted by the sound of voices outside. At the same time I became conscious of counting points in the border of a curtain. I could not quite recall doing this before the attention was distracted, still the counting did not seem to have begun at that moment.

56. F., 11. When the clock strikes I do not always count the number of times, but all at once it comes to me how many times it has struck and I always find that I am right.

57. F., 17. I count the steps when ascending the stairs, not realizing it until the last step is reached. Then the number comes out very vividly into consciousness. The number always proves to be correct.

Whether or not such action as is illustrated by the above cases can properly be said to be performed unconsciously, is a problem which cannot be entered into here.¹ It involves a complete

¹ Mr. F. W. H. Myers (Subliminal Consciousness, Proceedings of

theory of automatic and reflex action. Things said to have been done unconsciously, may have been performed with so slight a conscious impression that they are immediately forgotten, as probably occurs often in so-called dreamless sleep. The testimony in these cases that counting, etc., was being carried on while the mind was engaged in other things, is not conclusive evidence that the two things were simultaneous. Allowance must be made for fluctuations in attention and momentary distractions.

Like the avoiding habit, counting also has the marks of the insistent idea.

58. F., 17. Whenever I travel alone I count telegraph poles and signs, which I pass. I do it even when so tired counting that my head aches.

59. F., 19. I count organ pipes in church. Sometimes it almost makes me crazy, but still I go on counting; if I lose one it worries me.

60. F., 17. I became weary counting the telegraph poles and tried to stop; but when another one went by, something seemed to make me count it.

61. F., 17. I never see a row of seats or of anything else but I have an insane desire to count them.

62. F., 17. It worries me afterwards if I miss one.

63. F., 18. I often became nervous and excited because I could not count the number of gas jets on the chandelier at church.

64. F. When travelling I try to count the telegraph poles; if I miss one it seems to bother me, and I feel as if I must go back to it. Sometimes I find myself leaning forward so as to catch a glimpse, if possible, of the one I am losing.

65. F., 22. On the cars I try to count passing freight cars. It is annoying, for when the cars are going fast, I get tired and very much excited.

66. M., 20. Do this day after day until it has become a perfect bore.

67. F., 17. I cannot prevent myself counting slats in window shutters. I have counted organ pipes in church until tired; I tried to think of other things, but in a moment I was counting again.

68. F., 18. I am forever counting flowers in wall paper, rows of seats, panes of glass, which appear before my eyes. It is annoying but I cannot break myself of the habit. When I notice it I stop, but soon go at it again.

Soc. for Psychical Research) has attempted a general round up of the automatic states. There seems to be justice in his objection to the too free use of the term "unconscious cerebration." His theory is that the conscious personality which we call the self, is but a small part of the psychic activity which goes on in the organism. The empirical self is only one of a number of potential selves. Such automatic mental action as appears in crystal gazing, automatic writing, and the whole range of hypnotic, hysteric, and double personality phenomena, are communications from one stratum of the personality to another. Whatever may be said against his general theory, his objective point of view certainly avoids the narrowness of the philosophy which tries to measure the psyche with the one-foot rule of introspection.

69. F., 19. I am greatly annoyed trying to count flowers in the border of wall paper in my room, things on my bureau, or carved on my bedstead. Do this most when I first awake in the morning.

70. F., 11. I have often found myself striving not to count posts while riding on the train. I would by trying to think of something else, but every time I passed a post I would find myself noting the number.

71. M., 14. I would try to see how many posts had gone past and would feel very much worried if I had n't counted them.

72. F., 14. I have often caught myself counting the spokes in a wagon or a buggy, not thinking what I was doing it for, only it makes me feel more satisfied.

73. F., 17. I count rain drops falling on a certain spot. I get so tired doing it, and yet it seems as if I must. Such things happen when I am tired.

74. F., 20. I used to count the chairs in church. I could not be easy until I was sure I knew the exact number.

75. M., 23. A large driving belt passed up through the floor close by my machine. I often found myself counting the number of times the place where it was spliced passed the machine. I was not afraid of it or of its breaking, but I got into such a habit of counting it, and so nervous over it, that it tired me more than my work. I finally exchanged machines with a boy after trying in vain to break the habit.

In some cases the counting is done by special numbers, one always groups objects by twos, then by threes, and then, if there is a sufficient number, by sixes. Others count by fives, sometimes keeping count on the fingers. There is a feeling of satisfaction if the last number falls on the little finger or thumb. In one case fortunes were cast in this way, by counting letters in a sentence or words in a paragraph. Danger and disaster were associated with an uneven ending.

76. M., 29. I always count with reference to the number five. I count thus (on the fingers) when repeating aloud the Lord's prayer, a psalm, or any familiar quotation. I have done this all my life, and wondered if others did, but I never mentioned the fact before.

77. F., 18. If the last sound fails to come out at the last finger I keep on humming until it does. This has been a great annoyance to me, but it seems that I cannot help it.

78. F. Another tendency, stronger than any yet mentioned, is to count letters in a word on my fingers. I begin with the thumb and spell the word over and over until the last letter of the word comes out on my fourth finger.

79. M., 28. I always had a desire to count objects to see if they were odd or even.

80. F., 17. I am much annoyed by not being able to stop counting the fingers on one hand into fours. I count four until I can end on my little finger.

C. GROUPING.

81. F., 21. When about thirteen years old I was sick for two weeks, and as I lay in bed, a large part of the time was spent in putting the leaves of the wall paper into different designs. When I had constructed one I would tear it to pieces, and try to make another. This had a peculiar fascination for me.

While sitting in my room trying to think of something, I have often

caught myself trying to arrange the flowers on the paper into different geometric patterns, sometimes by taking from one part and adding to another. The forms which I make are usually either triangles or squares.

82. F., 19. Very often I have caught myself trying to make patterns out of figures in the wall paper, and sometimes, when lying down and thinking of other things, I find myself trying to find the end of a certain figure in the paper and then trying to connect it with another one.

83. M., 28. The ceiling of the family room in my house is covered with paper figured with circles of three sizes joined by straight lines. When engaged in thought I automatically group these circles into triangular, trapezoidal and diamond-shaped figures, and I have fatigued myself trying to secure a perfect square, or I fall to automatically tracing the linear courses of figures on carpets and wall paper. In riding through a wooded country I unconsciously search for trees involving the simple type forms, and plan how I should have them pruned if not perfect. I feel a slight pleasure when I find a tree which satisfies me. I beguile many a tedious hour in church with a species of half conscious study of the symmetry of the figures in the church windows.

The following objects were grouping; they are given in the order of frequency of mention.

Designs in paper, carpet, oil cloth, etc.; windows; curtain designs; figures in dress goods, in clouds; squares; circles; rows of objects; stars; frescoing; tiling; letters; geometrical figures; rounds of ladder; leaves of trees; fence gratings; and twenty others.

In twenty cases this activity is mentioned as being carried on while thinking, 37 find themselves doing it, when sick 7, lying in bed in the morning, when sleepless, etc.

The forms into which these objects were grouped, and the number of times mentioned, were as follows:

Square, 57; diamond, 30; circle, 21; triangle, 12; wheel, diagonal, trapezoid, straight line, hexagon, octagon, rows, oblong, crescent, pyramid, cone, lines, stars, steps, irregular figures, faces, animals, flowers. (The diamond and the square were mentioned in the syllabus.) In one case the eye simply followed around the lines of flowers on the wall paper without attempting to group or construct. This was a favorite form of distraction with this subject.

Extracts from cases will illustrate the kinds of thinking which tracing accompanies.

84. F., 12. I would unconsciously group the figures of the wall paper, while thinking, or studying about something else.

85. M., 13. I was walking with my brother, I was looking at the stars, forming them into wheels, while telling some stories I had read during the day.

86. F., 18. While listening to one reading I was trying to arrange figures on the wall paper into diamonds.

87. F., 23. While thinking of something else I find myself forming large squares on the oil-cloth.

88. F., 17. While engaged in conversation, I was making diamonds

and squares, and rows of each on the carpet. I was not thinking of the carpet at all.

Much more frequently, however, tracing accompanies states of fatigue and mind wandering, *e. g.* :

89. F., 11. I was sitting reading a book one afternoon, my mind wandered from the book, and I was unconsciously trying to trace squares in the wall paper.

90. F., 20. Often while reading, if I stop to think for a moment, I find myself trying to make squares out of figures in the carpet and wall paper.

91. F., 13. When I am sick I find myself arranging the figures of the wall paper into squares, and then into larger squares, until I cannot make them any larger. Then it comes to me all at once what I have been doing.

92. F., 14. I was not thinking of anything until a knock at the door called my attention to what I was doing. I was tracing out an imaginary checker-board on the tablecloth.

The same feeling of compulsion is found here as in the avoiding automatisms.

93. M., 19. I group patterns on the wall into squares, circles, etc., and if I find this difficult, my mind becomes confused; sometimes it amounts almost to suffering.

94. F., 18. I have often been in rooms where the wall paper seemed to worry me. I have tried to form definite shapes from the pattern, and have also tried to picture out forms of animals and the like from irregularly shaped patterns.

95. F., 18. I try to arrange wall paper, carpets, etc., into squares or circles. It is very irritating not to be able to do it.

96. F., 19. It made me so nervous that I had to have the room repapered.

97. F., 30. I have felt a kind of impulse to study out a pattern, and find all possible groupings of its parts.

98. F., 20. This had a peculiar fascination for me during my illness. Not subject to it at any other time.

99. F., 17. I have done this until it has haunted me.

D. BISECTING.

100. F., 17. I have often, without giving any thought to it, found myself dividing a large room off to see how many small rooms could be made out of it.

101. F., 17. I cannot recall bisecting lines, etc., but if near anything, that does not have two sides equal, I try to find out how it would have to be changed in order to have its parts equal, *e. g.*, in one of my class rooms the blackboard is made of two pieces of different lengths, whenever I look at it I try to find how much larger or smaller the pieces would have to be in order to be equal.

102. M., 23. If in a room where there is a mantel or shelf, on which vases and other ornaments are arranged, I almost always find myself dividing the mantel into halves, thirds or fourths, and then I will use each one of the larger ornaments to mark a point of division. Then the spaces which are left between the large vases will be divided into equal parts, and the small ornaments used to mark the points of division.

103. F., 19. I have half unconsciously divided up objects so as to compare them with similar objects. For instance, I have just changed

my room, and since I have been in the new one I have been comparing the doors. The closet doors are not so wide as the others, but they have the same number of panels. So I have measured off one of the small ones on the large one, to find out how much of the large one is left over. I have often compared and mentally rearranged the pews and organ pipes in church.

104. F., 17. I often find myself dividing the length of a panel in a door by its width to find the proportion between them. I have thousands of times divided the striped portion of our flag by the starred portion, to see how much larger it is. At church every Sunday I compare the height and width of the pulpit stairs.

105. F., 18. While lying on a sofa one afternoon I imagined the triangles on the wall paper turned at an angle around in a circle so as to form a wheel.

The following objects were bisected :

Objects in rows, 34; surfaces, walls, etc., 12; designs in wall paper, 11; organ pipes, 6; designs in furniture, 6; poles, 4; pictures, 4; desks, 4; designs in drapery, 4; designs in carpet, window sash, tables, fences, mouldings, boards, books, beams, mantels, chairs, plates, picture-frames, pencils, sticks, trees, figures in a column, figures in a drawing, shingles, verses, nose and chin, railings, door-posts, telegraph wires, roads, boats, chandeliers, flags, stairs, fields, people.

Bisecting was said to be carried on while thinking of something else in 8 cases; found myself doing it, 15; in church, 10; sick, distracted without thinking of it, unconsciously, lying down, when free to think of anything, talking, on the street cars, tired, reading, listening, in class room, in strange church, studying, mentioned less than five times each.

This group, like the others, shows all the grades of automatic action and absorption.

There are several cases in which objects, not symmetrically arranged, were said to cause annoyance, *c. g.* :

106. F., 18. If I go into a strange room I measure distances with my eyes to see if the pictures, etc., are in the middle of the wall spaces. I want to put them there if they are not.

107. F., 17. In church I think how much better it would be to have half of the choir box removed and the choir put into the middle of the church.

108. F., 19. Whenever I see an object with lines across it I immediately bisect it. If the line is not exactly in the middle it annoys me very much.

109. F. An artist, is always looking to see if a thing is straight. She told me she believed she would have to change her seat in church, because the beam of the cross on the book-mark in the Bible was not perfectly straight, and she sat just in front of it.

No final conclusion can be drawn from the returns studied here, as to the age when these mental automatisms are most frequent, as there are no cases under 11 years, and the majority who reported are from 18 to 22. The habits are often, however, said to have been more persistent during the first years of adolescence.

The cases from 11 to 13 show a less wide range of objects grouped, counted, etc., than those from 17 to 21. In one case counting began with a single group at four years, and was continually added to.

These activities appear as automatisms of effort in comparatively few cases: in avoiding, 33.5% of the whole number, counting, 5.8%, bisecting, 10.4%, grouping, 15.87%, may be called effort automatisms. The great majority must be regarded rather as reverie or distraction phenomena.

II.

Avoiding. In these days of artificial products the foot has been robbed of much of its natural function. With primitive man conditions of travel were very different from what they are now. He had to make his way over rough, unbroken ground, often with scanty protection for his feet. There was constant danger of injury and need of precaution. Sharp stones and branches had to be avoided, there was always danger from poisonous snakes and insects. Still earlier, the animal, depending for its success in the hunt for prey, and for its escape from its enemies upon the silence of its step, had always to proceed with caution. Undoubtedly with many domestic animals, *e. g.*, the horse, a considerable part of the consciousness is concerned with where he shall put his feet. Objects not known to be safe are regarded as dangerous. He is suspicious of bridges, and often of shadows and sunbeams. The extreme sensitiveness of the palms of the hands and feet in man is to be regarded as a relic of this ancestral precaution. The skin of the parts is far more sensitized than any present need or use demands. If this is true, and a factor so important has left any traces at all in consciousness, where should we more reasonably look for them than in such temporarily disorganized states as fatigue and distraction, when the later and more individual and hence less stable associations are cut off, or when the mind is absorbed in deep thought, and inhibition being removed, associations of lower levels are given free play. Is it too much to assert that in these automatic avoidings we have the remnants of an ancestral foot consciousness once an important part of the psychic life but now shrivelled up to insignificant proportions. They may, it is true, all be associations built up in childhood by imitation, added to by folk-lore and games of poison, etc., but the great frequency of the habit, its persistence and imperativeness, point to a deeper origin.

Counting and Grouping. The origin of much of this automatism is to be sought, no doubt, in early acquired associations. Counting is learned early in life, is constantly used, and tends to become automatic. Preyer (*Popular Science Monthly*, Vol. XXIX, p. 221,) shows that a small group of objects can be

counted unconsciously, and that the ability to estimate without counting increases with practice. Cases given above will be recalled in which counting was carried on apparently unconsciously, the number coming out distinctly in consciousness at the end.

In the same way grouping, tracing, bisecting are to be regarded as largely revivals of early associations connected with drawing in school, etc. Just as familiar motor acts are performed automatically, these figures are worked out visually on lines standing ready made. The line which separates motor from mental automatisms is hard to determine, and it is possible that much of this mental automatism arises from automatic, unconscious movements. The eye tends to follow along prominent lines. On entering a strange room one will often follow with the eye first the long lines of the ceiling and walls. Again it is easier, having traced out a figure to repeat it, than to form new combinations. This is the nature of automatic action in general. Much ornamental art consists of such repetition of simple figures. It is, in a sense, a fatigue product and its charm is due in part, no doubt, to the feeling of restfulness which it produces. In some of the cases of tracing there is a more active element, very similar to the puzzle instinct. Combinations are made, and then torn to pieces and new forms constructed. In one case the impulse was to see how many different forms could be traced out of a single pattern.

Grant Allen¹ offers the following explanation of the love of symmetry :

There are two elements in it: (1) An active element, the rhythm and recurrence of bodily movement, such as the automatic leg movements in walking, and the measuring off of equal spaces by the steps. (2) A passive element, habitual observation of symmetrical objects. But the great factor in the building up of the sense of symmetry has been, it may well be claimed, the symmetry of the body itself, a sufficient reason if we take into account the relations between the appreciation of form, and sexual and natural selection. This tendency to develop symmetrically has attended the whole life history of the race, and it seems to be an almost universal habit of matter, organic and inorganic, to crystallize into definite geometrical forms.

Symmetry enters largely into the products of animal activity, *e. g.*, the symmetrical structures of ants and spiders, the circular nests of fishes and birds. The application of such a biological theory of the origin of symmetry love to these groups

¹ The Origin of the Sense of Symmetry, *Mind*, 1879, p. 301.

of mental automatisms is plain. While the content of the automatism may be early acquired, association—the impulse that preserves and makes imperative these forms of eye-geometry, depends upon such instinctive and inherited traces, as, it is believed, form the basis of the love of symmetry itself.

A suggestion may be ventured that we may have to look here finally for the origin not only of all conventionalism in art, but also for the impulse which led to an interest in geometrical science.

The imperative character of the counting automatisms has been commented on above. The telegraph poles flying past seem to stand out from the visual field, and announce their numbers. The mind reacts to certain rhythmical movements and successions of sounds, as if they played upon sensitive chords in the soul. The profound effect of rhythm upon the child and the savage has often been noticed. This effect it is believed, is largely due to the character of the body rhythms. Organic life is full of rhythms from the contractions of the primitive protoplasm to the highest nervous processes. The circulation became separated out as an independent function low down in the animal scale, and became rhythmical. Its effect upon the mental processes is probably the greatest of all the physiological rhythms. Hughlings-Jackson says somewhere that the rhythmic sense is nothing more than the cardiac systole taken up into the highest levels. Dr. Bolton in his experimental work (*Rhythm. Am. Jour. Psychol.*, Vol. VI, p. 145,) found that a series of uniform clicks was irresistibly divided up in accord with the circulatory and respiratory rhythms.

The most probable foundation of the counting impulse is this susceptibility to rhythm, as shown both in the counting of auditory impressions and the tendency to interpret spacial relations in the form of successive sensations. The tendency of all stimuli is to pass into motion. A succession of impressions starts automatisms and seems to summate these responses and to induce a sympathetic vibration in the whole organism. It is a question whether counting was not at first a naming of this succession of feelings.

The effect of an established rhythm seems to be to augment and irradiate the impressions from such regularly occurring excitations as those which form the objects of these mental automatisms. It is comparable to the effect of a resonance box upon the volume of tone from a tuning fork.

The action of the primitive plastid, as well as of the uninhibited nerve cell is constant uninterrupted movement.¹ It is

¹ Le Dantec (*Théorie Nouvelle de la Vie*) brings forward a theory by which he attempts to unify the anabolic and katabolic processes.

only with development, with inhibition and co-ordination that we get the more complex rhythms. This is shown also in psychic processes. Reflexes and automatisms are inhibited and rhythms are stored up. It is by grouping the elements in the stream of thought that the Umfang of consciousness is widened. Grouping is a synthesis of elements. Rhythm is the basis of apperception according to Wundt.¹ It is the utilization of rhythms that makes up the higher mental processes.

These absorbed states, in which consciousness takes the form of mere succession of sensations, represent a relapse to a more primitive form, in which all change in the psychic life, perhaps, was composed of a series of shocks, corresponding to events in the outer world or to the rhythm of movement.

The effect of body rhythms and automatic movements upon the emotional life is great, and there can be little doubt that they have given the impulse to poetry and music, as well as to counting, and thus to all computation.

Bisecting. Bisecting has been touched upon in connection with symmetry, and the conclusion was reached that a great factor in the symmetry sense was the bilateral form of the body itself. Mach² makes the bilateral form of the visual apparatus the foundation of the pleasing effect of symmetry, and points out that it is vertical rather than horizontal symmetry which is pleasing. Nearly all the objects bisected, it will be remembered, as gathered from these cases were bisected with reference to vertical symmetry. This accords very well, also, with the theory maintained in this paper. The bilateral form has been used almost universally in art. Wherever there have been deviations from it, as in the slightly asymmetrical forms used by some races, they seem rather like the slight variations from harmony in music, which make the harmony more complete, than a reaction against symmetry.

In some cases the bisecting impulse seems to be connected with balance, *e. g.*, those cases in which an unsymmetrical arrangement of objects causes feelings of distress and dizziness. Just how the equilibrium of the body is maintained is unknown. Verworn³ has demonstrated that in the ctenophor the otoliths are connected with this function. Delage and Breuer have proved this to be true, also, for the arthropods and the mollusks, and Verworn concludes that it is also true of vertebrates. According to this explanation equilibrium is preserved by

They are two phases of the same process he says. Functional activity and growth are one and inseparable. The important bearing of such a conception upon any theory of automatic action is evident.

¹ *Physiologische Psychologie* II, 246.

² *Popular Scientific Lectures*, p. 88, seq.

³ *Pflüger Archiv.*, 50, p. 423 seq. Gleichgewicht u. Otolithenorgan.

reflex muscular movements initiated by afferent impulses originating in the otoliths. Dizziness is probably the sensation of incoordinated muscular movements. Whether this is true or not, the feeling of balance is influenced very considerably by sensations received through the eye, as illusions of position and dizziness from unconscious movements of the eyes show. The sense of pressure on the skin has also been thought to be concerned in equilibration. According to this view there are special peripheral nerves which mediate balance, and the feeling of balance comes from equal pressure on both sides of the body. This dividing of the visual field seems to be connected with the part which the eyes play in preserving balance.

Pathological Automatisms. All these mental automatisms have their counterparts in pathological conditions. Arithmomania, or insistent counting, is very common among insane patients. There are cases in which the patient feels impelled to count everything; he is uneasy until he knows the number of objects in a group, people in a church, etc. Others must count a certain number of times before performing any act, the habit often becoming so imperative as to interfere with the work of the patient. The case related above of counting seams in a belt, borders closely on the morbid.

Objects on the wall, figures in wall paper, sometimes become objects of a kind of hypnotic attention, especially in illness. A case observed at the Worcester Lunatic Hospital shows the passage of this attention into a morbid process. The patient, suffering from an acute disease, began to watch a circular spot on the wall, which became so obtrusive that it absorbed all his consciousness. It became at last the center around which delusional ideas were grouped. The trouble disappeared on recovery from the fever. Another border-line phenomenon is the extreme sensitiveness to asymmetry. Two of our cases of normal individuals show this in an extreme degree.

110. M., 35. Becomes angry if everything is not in its proper place, is continually moving books, and dishes on tables into more regular order.

111. M., 28. Other marks of the architectural instinct are quite prominent, and sometimes annoying. I cannot help noticing the symmetry, or want of symmetry in the arrangement of furniture in a room, and have had evenings spoiled by involuntary observation of pictures awry, or too high, or too low, or of chairs, tables, or instruments not arranged harmoniously. While, on the other hand, I am soothed and my better feelings promoted if the arrangement is harmonious. My feelings rebel if the tallest person in a group of three does not walk between the shorter ones. I automatically look at once at the church choir to see if they are graded regularly from the end to the center of the group, the shortest at the ends, the tallest in the center. I also feel a sense of injustice if the parts are not equally represented in number of singers. I have in church and club meetings realized discomfort from observing that the persons present were

not equally distributed in the room. While seated at my desk in conference with callers I automatically draw rapidly at geometrical figures.

Some notable cases of insistent mental automatism have been recorded in history, *e. g.*, Napoleon's habit of counting windows, and Dr. Johnson's habit of touching posts.

The list of mental automatisms and insistent habits comprises many more than those touched upon here. There are many forms of the automatism of touching and avoiding, as the fear of passing posts, or of poison from contact with certain metals or colors. Similar in kind are what might be called automatisms of hesitancy, of repetition, and doubt, and all those inflammations of the categorical imperative so common at puberty, in which moral doubt in regard to common acts is accompanied by repetition, feelings of danger, etc.

Neurological. Demoor,¹ following along lines laid out by Cajal and others, has demonstrated that under the influence of chloroform, chloral, and other narcotics, the dendritic and neuritic processes of the cortex become moniliform or beaded. This condition he believes to be due to contraction and retraction of these elements. Moreover he found that under lighter narcotization the finer and more irradiated branches become moniliform, while the larger ones remained normal. This condition, Demoor believed, would be found also in sleep and other similar conditions.²

This theory of the retraction of nerve elements, of making and breaking of contract while not as yet demonstrated, is, as Demoor says, one which is at present dominating neurological thought. Duval and Lapine (see biography contained in the monograph by Demoor quoted above) arrived at conclusions similar to those of Demoor, both admitting that it was exceedingly probable that the nerve elements are capable of amoeboid movements, and that they make temporary connections with neighboring cells. Solvay likewise. Azoulay and Klippel found that in general paralysis the peripheral prolongations of the cells were attacked first, and finally the cell body became involved. Renant, studying the structure of the ocular neurons says: "They make and break." Klemm also says that the brain elements are more or less contractile.

This theory furnishes a plausible hypothesis for the explanation of many hitherto inexplicable states, and particularly such

¹ La Palasticité morphologique des neurones corticales.

² We are not concerned here with the question whether or not this beading is produced by narcotics or by causes yet to be discovered. The essential fact remains that there is a beading of the processes and this *may* represent a retraction of dendrites and neurites.

divided off states as we have in these automatisms, both mental and motor.

F. W. Langdon¹ has attempted to apply this theory to epilepsy and chorea. These, he says, are the result of insufficient inhibition resulting from a diremption of the cortical neurons, the location varying with the type of the disease. Psychic epilepsy and chorea have been similarly explained. While this conception may serve as an explanation of the fundamental conditions in many of these states, it does not, of course, account for the origin or nature of the conditions which have brought about any particular case.

Phylogenetically and in the individual the brain growth is not a uniform process. Flechsig² maintains that the projection areas have been developed somewhat independently, while the large association areas are the product of a late development. On the same line is Hughlings-Jackson's three-level theory, and the more recent work of Locy and Bateson, and their theories of segmentation. Also, Hirth³ maintains that the personality, the "Ichsynthese" is a complex of many elements. We are distracted, he says, because the "Ichsynthese" is not one but many. The brain is made up of many *Merk-systemen* leading a more or less independent existence, and possessed often of very different temperamental characteristics, such as susceptibility to fatigue, etc. The psychic life is a complex, and, as the pathological conditions of mental shock and confusion abundantly show, a complex liable to diremption. Co-ordination is the result of a high nutrition, and a vigorous living force, and when this gives way, in pathological conditions, and in the normal states of sleep, and fatigue, and hypnosis perhaps, there occurs something of a resolution into elements. Then older, perhaps better nourished "*Merk-systemen*," to use Hirth's term, come out with greater force and fatality. The psychic life is united, as it were, by sutures, more or less closely knit together, and when broken up by shock, fatigue, etc., tends to divide along fixed lines.

This co-ordination, which is the result of development, and which represents an adaptation to surroundings, is liable to temporary disorganization from environmental changes. In such conditions Dr. Montgomery⁴ sees the origin of all organic variation. At adolescence appears a similar disturbance of co-ordination, not from change of environment, but from ripening of new functions. A flood of new instincts and sensations breaks

¹ *Journal of Mental and Nervous Diseases*, Vol. XXI.

² *Gehirn und Seele*.

³ *Localisations-Psychologie*.

⁴ *Organic Variation*, *Journal of Morphology*, May, 1896, 251-308.

up the old associations. At this time appear a great number of incipient diseases, moral disturbances and imperative ideas; transmitted habits, and diatheses tend to become fixed then, reverie and automatisms seem to be more prevalent. It is a time of setting a new and wider horizon to the psychic life, and it seems probable that all these rudimentary organs, this automatic group, and the absorption states generally, do service then in stimulating and exciting growth of new associations, and assist in producing the general erethism of the nervous structure necessary to accomplish readjustment and unification. In normal growth, after performing this service, they tend to drop out or become absorbed.

In a wider sense the whole problem of pedagogy, according to the new genetic standpoint, is concerned with nascent periods of instinctive interests, and rudimentary organs and how to utilize them as framework for higher structures, as stimulus to interests, and then to cause them to disappear.

CONCLUSION.

If a conception so speculative may be pardoned, the neural mechanism of these rudimentary organs may be expressed somewhat as follows: A, is an upper stratum of associations, not topographical but physiological, acquired by the individual. B, corresponds to a system of lower associations, inherited perhaps, in some cases acquired in childhood, and constitutes a rudimentary organ. If the associations are all intact which unite A and B, a stimulus reaching B passes up into the higher level A. But if A is cut off from B, then the stimulus is more widely irradiated in B. We have B then functioning only under conditions exceptionally favorable to it. A little later stage of disappearance of B may be imagined, in which its functions, as far as consciousness is concerned, ceases altogether, but it still remains as a center of excitation, or a trophic reservoir for the higher associations, A, corresponding on the psychic side, perhaps, to an interest, and deeper resonance when these associations are excited. Any complete theory of instinct must take into account the influence of such submerged tracts.

Some such action as this must be supposed in these mental automatisms. It would be difficult to prove that any one of them was inherited or instinctive, but the habits formed may be regarded as more easily acquired because of these older associations. It is like tilling soil which has once been ploughed. It is because of them that the automatisms persist and become imperative and obsessional.

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THE PSYCHOLOGY AND PEDAGOGY OF ADOLESCENCE.

By E. G. LANCASTER, Fellow in Clark University.

INTRODUCTION.¹

Child-study is perhaps the greatest educational advance of the century and is pregnant with the greatest possibilities. It is now recognized everywhere as fundamentally important in all educational work. The study of adolescence begins to attract general attention and promises to bring in a new era of education in the years between childhood and adult life. If possible, it is more important than child-study, because dealing with a period fraught with greater dangers and larger possibilities than any other period of life. The briefest possible résumé of publications along that line is given here.

The first publication that the writer has seen appeared in the *Princeton Review*, 1882, and later was reprinted in the *PEDAGOGICAL SEMINARY*, Vol. I, No. 2, by President G. Stanley Hall, entitled "The Moral and Religious Training of Children and Adolescents."

Intro I — President Hall set forth the rational grounds of all moral and religious culture. The infant at first shows its religion in the sentiments directed toward the mother. Religious training should not be forced in the early years. Gradually obedience, truthfulness, love of nature and nature's God lead up to love of the Heavenly Father.

Part II concerns the present study. Dr. Hall says: "Probably the most important changes for the educator to study are

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those which begin between the ages of twelve and sixteen and are completed only some years later, when the young adolescent receives from nature a new capital of energy and altruistic feeling. It is a physiological second birth, and success in life depends upon the care and wisdom with which this new and final invoice of energy is husbanded." It is a correct instinct that emphasizes regeneration. Far more conversions take place during the adolescent period, pro rata, than during any other period of equal length.

Before this age the child lives in the present a selfish, frank, obedient, imitative life. Now there is a sudden change in body and mind. Things are seen in new relations. Parents lose the confidential grip on the youth. Education must be addressed to freedom now. Then come longings for sympathy, deep emotions, moods, love of solitude, feelings of rivalry, self-sacrifice, etc.

"It is a period of realization, and hence often of introspection. In healthy natures it is the golden age of life." It is a time of rapid change and dangers and temptations are great. It is the time for the greatest love from the home and the deepest interest from the church. It is the first safe time for a change of heart. Previous forcing only inoculates against deeper religious interest later. The whole period should be one of growth extensively and intensively for the best results of religious culture.

The article contains the germs of the present treatise on adolescence.

"The Study of Adolescence" in the same number of the PEDAGOGICAL SEMINARY (Vol. I, No. 2,) is a thorough and far-reaching presentation by Dr. Burnham, of Clark University. This study, and the above-mentioned by President Hall, have furnished the text, if not much of the sermon, for all that the present writer has seen on adolescence.

Dr. Burnham says: "It has been a world-wide custom to celebrate the advent of adolescence with feasts, ceremonies and mystic rites. Among savages the power unflinchingly to endure pain is the usual test of manhood. The breaking out of a tooth, the stinging of wasps and ants, tattooing with a sharp stone, bleeding, circumcision and the like" are practiced to celebrate the advent of puberty.

"Just as a study of the psychology of childhood is an indispensable part of the preparation of every teacher in the lower grades, so a study of adolescence should form a part of the education of every teacher in the higher institutions."

"The subject should be studied scientifically from the standpoints of physiology, anthropology, neurology and psychology."¹

¹It may be said that this suggestion has been followed. Mr. Yoder,

— Dr. Burnham discussed each of these divisions, bringing together much of the valuable data then accessible. He took Clouston's definition of puberty as the "initial development of the function of reproduction" and adolescence, "to denote the whole period of twelve years from the first evolution up to the full perfection of the reproductive energy." Under the physiological, Dr. Burnham gave the ordinary physical changes, growth and the relation of growth to disease. Under psychological changes he discussed at length the mental phenomena of the period. It is a time of new sensations, increased psychic manifestations, and often a storm and stress period. He cited characters from literature who illustrate these phenomena.

He gave the results of a study of answers to a syllabus, treating briefly of dreams, health, dress, conscience, growth and the outcrop of ancestral ways at this period.

The morbid and more serious activities were treated briefly. "Life for the first time perhaps begins to look serious. The young man has come into possession of his inheritance from the past."

Cases were given illustrative of the storm and stress, the doubts and intellectual activities of the years 18 to 25. Half or more had this emotional stress period. He also showed the fact that the period might be repeated in later life. Philosophic writings, done by adolescents, as cited by Dr. Burnham, show that "the incentive to philosophic thought generally comes at adolescence."

"Another phase of adolescence is illustrated in the poetry of the romantic school." "In natures where education and hereditary tendencies check emotion's natural outlet in action, emotion itself becomes the aim of life. Shelley, Byron, Novalis, and perhaps both Goethe and Schiller in their younger days, are examples." "It is evident that there is a great evolution of energy at adolescence that must find outlet in some way." "Youth must be given the opportunity to do something." "The grand pedagogical aim should be to utilize the tempestuous emotions of adolescence."

The whole article should be read very carefully by all who wish to study this subject. The writer finds it a mine of suggestion.

now President of the Vincennes University, has done considerable work on the physiological, including the neurological side, the results of which are as yet unpublished.

Mr. Daniels, whose study will be considered below, worked up the anthropological side. Mr. Starbuck is making a study of the neurological side of adolescence, and the writer attempts to give below some of the characteristics of the mental side, with some reference, at least, to psychology.

The next paper on adolescence appeared in the *American Journal of Psychology*, Vol. VI, No. 1, written by Arthur H. Daniels, at that time Fellow in Clark University. The title is, "The New Life: A Study of Regeneration." The first part is a careful development of the anthropological side of adolescence.

Mr. Daniels gives a résumé of the rites and ceremonies at puberty known to have been practiced by various peoples, such as circumcision, knocking out the teeth, clipping the hair, tattooing, fasting, seclusion, change of name, beating and torture of the most cruel nature.

"The recognition in so many different ways and by almost every race, of the transition from youth to manhood, has a deep psychological as well as physical significance."

He shows that the taboo which has kept back the needed study of this period and a proper understanding of the common events in a boy's or girl's life was as barbarous in its origin as it now is in its practice. Mr. Daniels says: "Reproductive power might be called the 'apperceptive center' about which are clustered the religious thoughts and, indeed, thoughts about the most sacred and mysterious things, of many people." "Coincident with the functioning of new organs, and the development of cerebral centers which have hitherto lain dormant, are profound, intellectual and emotional changes." "The activity of the organs, which connect the individual with the race, is accompanied by powers and instincts which affect his mental life in its various aspects and mark the beginning of a new life intellectually, morally and emotionally."

He quotes extensively from Dr. Burnham's article cited above to show the awakening of intellectual life at puberty.

In the second part Mr. Daniels takes up regeneration, or the new life of the spirit, as a parallel to the physical changes that come at adolescence. "My main thesis is to show that these practices, both of civilized and uncivilized people, are founded on fundamental, physical and psychological principles, and accordingly to emphasize not only the fitness, but also the need of the spiritual change, which theology has formulated in the doctrine of regeneration during adolescent years."

The author gives a few statistics, not very conclusive, to prove the statement of President Hall that conversions are most frequent in the adolescent period. He discusses the relation between morbid religious conditions and immorality, the naive religious life that grows up naturally to adolescence when there comes a break with the past and there "is need of a new consciousness of God." From this point the discussion is on theology rather than adolescence.

He gives a bibliography of 58 titles, which includes much of the literature on the physical side of adolescence.

"A Study of Conversion," by Mr. Starbuck, Fellow in Clark University, appeared in Vol. VIII, No. 2, of the *American Journal of Psychology*.

The religious element is not by any means characteristic of adolescence, but has often been noticed as occurring most frequently at that time. Mr. Starbuck shows in another paper (at this writing not published) that out of many hundreds of cases of conversion, the greatest number of cases occurs at about sixteen and the average age at nearly the same time. The curve rises rapidly from twelve to sixteen and falls quite rapidly from sixteen to twenty.

I quote from Mr. Starbuck a few passages which bear on adolescence: "The period of adolescence is naturally the time for the awakening into the larger life. It begins at puberty." "Many were left out of the study because they had clearly been forced into compliance with what they were not ready intelligently to accept. They were pulled green and withered." "It is like pulling away the folds of a growing bud to disturb unduly the tender unfolding of the religious nature."

"The hardened natures who need the help of violent methods for restoration are the last to respond, and meanwhile much harm is done to those who are receptive and responsive to finer influence."

"The higher motives should be appealed to more and the lower ones less. It is doubtless entirely out of proportion that one-third of the subjective forces present at conversion were self-regarding (mostly fears) while the number of distinctly altruistic motives" were one-ninth.

In Vol. IX, 1895, of the *Educational Review*, p. 135 ff., appeared an article by W. B. Jacobs, of Brown University, on "Values in Secondary Education." It is a strong attack on the Committee of Ten for neglect of adolescent psychology in their construction of curricula. He uses the facts given in the above noticed articles on adolescence with telling effect. He shows how adolescence must be studied and understood before curricula can be safely laid out, or the question of coeducation settled or the question of what is valuable in High School years or what is injurious can be determined.

The study of adolescence has attracted the notice of educators as evinced by this article of Jacobs and the following from the Report of the Committee of Fifteen, found also in the Report of Education, 1893-4, Vol. I, p. 485.

"THE SCIENCE OF TEACHING.

The elements of this science are :

I. Psychology in its physiological, apperceptive and experimental features. The period of adolescence here assumes

the prominence that childhood has in the psychological study preparatory to teaching in lower schools. This is the period of beginnings, the beginning of a more ambitious and generous life, a life having the future wrapped up in it; a transition period of mental storm and stress in which egoism gives way to altruism, romance has charm, and the social, moral and religious feelings bud and bloom. To guide youth at this formative stage, in which an active fermentation occurs, that may give wine or vinegar, according to conditions, requires a deep and sympathetic nature and that knowledge of the changing life which supplies guidance wise and adequate."

These suggestions have received far too little notice from teachers, probably because the psychology of adolescence is not widely known, and there is almost no literature on the subject.

In No. VIII of "Studies in Education," by Earl Barnes, of Stanford University, is a short article on "Sex-information" with a carefully selected bibliography of the literature intended to give such information. It should be consulted for the literature on adolescence. In addition to the above there is much literature that moralizes on the training of young people and freely "sheds advice," but cannot be recommended for a scientific study of this much misunderstood period of life.

Clouston, in Hack Tuke's Dictionary of Psychological Medicine, Vol. I, pp. 360 to 371, gives a general statement of the physiological psychology of adolescence from the medical standpoint.

The qualities and characteristics of a human brain are greatly different in childhood, puberty, early and later adolescence. The brain is liable to different diseases at these different stages. There is no period of life when uncomplicated insanity occurs more frequently than from 21 to 25. 78 per cent. of the cases of insanity of adolescence are those of mania, while most of the others are melancholia. He discusses the symptoms and meaning of disease at this period, the treatment, and the normal psychology of adolescence.

Madden, in Keating's Cyclopedia of the Diseases of Children, Vol. I, pp. 389 to 416, gives valuable results of many years of study of puberty, the time of its occurrence, and hygienic treatment. Ill fed children cannot endure mental strain at this period. Female diseases are mostly sown at puberty. Musical stimulation several hours a day is doubtful in its moral value. He gives rare and precocious cases of puberty.

There are many articles scattered through medical literature, — but these are sufficient for an introduction to that literature.

CHAPTER I.

The hope of Truth grows stronger day by day ;
 I hear the soul of Man around me waking
 Like a great sea, its frozen fetters breaking,
 And flinging up to heaven its sunlit spray,

And every hour new signs of promise tell
 That the great soul shall once again be free,
 For high, and yet more high, the murmurs swell
 Of inward strife for truth and liberty.

—LOWELL. *Sub Pondere Crescit.*

The growing interest in adolescence is one of the "new signs of promise" that a greater freedom, and a love and sympathy hitherto unknown, shall become the inheritance of all young people.

Savage tribes have long observed the period as one demanding special treatment, and enlightened people have expressed deep concern for young people at this age, but in both cases youth suffer because they have been misunderstood.

Many of the methods which have been so fruitful in the study of the child should be used to mass records, observations and data of all kinds regarding the adolescent period.

To allow young people to express their own feelings and opinions, a syllabus on Adolescent Phenomena in Body and Mind, prepared by President G. Stanley Hall and the writer, was addressed to persons between the ages 12 and 25, and to teachers and parents for observations or reminiscences, asking for full and free replies.

They came, evidently from full hearts. 827 have been received, some taking 75 pages of foolscap for one individual return. These answers have been grouped and condensed and the results will be given, first with little comment, followed by a more complete discussion.¹

For a better presentation the order of the syllabus will be changed here. The syllabus will be given one section at a time for closer connection with the statements of results.

I. PHYSICAL CHANGES.

Physical adolescence begins with puberty,² which in turn

¹ A book of these condensed returns may yet appear as a heartfelt appeal to parents and educators.

² See Bierent, "La Puberté," Paris, 1896, pp. 200, with bibliography of 65 titles giving physical and medical literature mostly in French.

begins with certain internal developments followed by the external phenomena which indicate the advent of puberty.

Beneke says,¹ that from birth to the end of puberty a complete conversion of the relation existing between the size of the heart and the width of the arterial system of vessels takes place. In childhood the heart is relatively small against relatively large arteries. It remains much the same till puberty.

With growth in the length of the body this relation is reversed in consequence of a sudden increase in the amount of blood which demands increased work of the heart and therefore increases rapidly the size of the heart with a relatively small growth of the arteries in cross section. This new relation is permanent.

In childhood the relation of the heart to the arteries is as 25 to 20. Before puberty this becomes 140 to 50, and in full maturity 290 to 61. The blood pressure is therefore far lower in childhood and very much higher in adolescence. An exception occurs in the pressure of blood in the lungs which is slightly lower in the adult. The blood pressure is, then, lower while the brain is growing and higher after it has reached its maximum size. This change of blood pressure is therefore one of the first signs of approaching puberty.

There is a slight increase in the temperature of the body at puberty which indicates unusual chemical activity. There is, too, an increase of red corpuscles in the blood which makes anæmia especially dangerous at this period.

No one knows as yet what changes occur in the brain. The weight has nearly reached its maximum years before.²

It is thought that there is a large increase of association fibers and medullation of fibers which shows their maturity.

Externally there is with girls the periodic sickness as a definite sign of puberty, when it occurs normally, followed by rapid maturity of the body as a preparation for motherhood. The figure rounds out, the bust develops and the bones in the pelvis change rapidly. The change in the angle of the vertical axis of the pelvis is one of the first developments which, with the rapid growth of the hip bones, makes the girl taller about 13 than the boy, when standing. "This affects the length of the step and position of the body,"³ and causes an awkward movement in walking. Running becomes very difficult. The art of graceful walking or running must be acquired anew. Ascending stairs becomes especially difficult with girls who are best developed.

¹ Ranke, *Grundzüge der Physiologie des Menschen*, S. 491 ff.

² Donaldson, "Growth of the Brain."

³ See Dornblüth, "Die Gesundheitspflege der Schuljugend," pp. 145-154.

Growth of the thigh bones may be so rapid at this period, with both sexes, that the muscles cannot keep pace with them and the result is a stretching of the muscles, causing "growing pains." These are often severe. The returns show this phenomenon only with boys. It doubtless may exist in both sexes. On the other hand, the muscular system may grow faster than the bones and the boy becomes clumsy. He cannot control his movements easily and runs against everything, drops whatever he touches and tumbles over it in trying to pick it up.

For exact data the following questions were asked in the syllabus. 341 males and 446 females answered part or all of it.

Growth generally. When was growth in height or weight greatest? Was this period of growth attended by better or deranged health? Give any details; as to how much, where, how long, etc.

187 persons answered this section of the syllabus. Of these 139—48 M., 91 F., said that they grew most rapidly in height just after puberty, while 48—10 M., 38 F., grew at or before puberty, or were indefinite in answer.

These answers brought out clearly a relation between growth and health not mentioned before. 133 of these report health better or undisturbed by the rapid growth and advent of puberty. 38 report health poor and 3 report great weakness. The rest of the 187 are not definite. It will be noticed that these numbers correspond roughly to the numbers who grew after and before puberty.

A careful study of this point, based on these returns, indicates that the period of most rapid growth in height and weight comes normally after puberty. If this rapid growth comes before puberty, health may be endangered while growing or at puberty or at both times.

The figures are certainly significant.

Most rapid growth at or before puberty and health good, 2 M., 10 F.

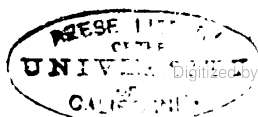
Most rapid growth at or before puberty and health poor, 3 M., 36 F.

Most rapid growth after puberty and health poor, 1 M., 11 F.

Most rapid growth after puberty and health good or improved, 17 M., 80 F.

Thus 8 to 1 have good health at time of growth and puberty if the rapid growth is after puberty, while over 3 to 1 have poor health if the rapid growth comes at or before puberty. This, of course, does not mean that for a year or two before puberty there may not be an accelerated growth without danger, but to shoot up to nearly the full stature as they often do safely after puberty, is dangerous before puberty.

Taking the number that report the time of the most rapid



growth by years, the years range from 9 to 19, with the following number of cases reporting for each year, respectively: F., 5, 11, 17, 41, 45, 57, 51, 29, 10, 6, 3. That is, 5 at 9, 11 at 10, 17 at 11, 41 at 12, etc.

The curve would thus culminate at the age of 14, which is very similar to the curve of Key. The curve for boys culminates at 15 to 16.

In weight the greatest growth in any one year is reported for the years 10 to 23 respectively, as follows: F., 2, 4, 14, 13, 15, 18, 24, 35, 13, 8, 6, 4, 2, 1.

The curve of growth in weight culminates two or three years after the curve of growth in height. With boys the growth in height was greatest at 15 and 16, in weight at 16, 17 and 18. The number of boys answering this question is too small to be very significant.

According to Key's law, the period of maximum growth is the period of maximum power to resist disease.

These returns show that extreme growth in height at any time is likely to be accompanied by ill health or great weakness. This liability is less if there is a good increase of weight at the same time. Growth in weight after puberty is generally accompanied by good health. A large and rapid increase of weight before puberty is likely to be accompanied with ill health.

This relation of growth to health, as pointed out by Key and others, shows the relation of growth to chronic diseases. It does not follow that growth may not be accompanied by weakness or deranged health which may render good work in school or elsewhere almost impossible.

Space will allow only a few typical returns on each section selected from a very large number.

M., 32. At 15 I had to leave school, owing to a peculiar sickness incident to growth. My muscles felt stretched, not long enough for the bones. One time I walked two blocks and absolutely could not walk any farther. Quit going to school for a time.

M., 18. Health very good. Dream less and sleep better. Grew rapidly 14 to 16. Troubled by growing pains. Grew in weight 12 to 18 from 98 to 180 lbs.

F., 18. Growth in height was greatest at 14, and in weight at 12. Health was most deranged. Puberty at 12 years and 8 months.

F., 20. Grew tall fastest 9 to 14. Health not so good at this time. Puberty 14 years and 9 months. Health now very good.

F., 17. Grew most rapidly 11 to 13 in height and weight. Head and stomach trouble. Puberty 12.6.

F., 20. I grew the fastest about 15. Greatest increase in weight at 19. Health better then. Health poor during adolescence. Nervous and stomach trouble. Puberty at 15 years and 10 months.

F., 17. Grew in height 12 to 14. Weight 14 to 16. Indigestion and stomach trouble, though general health good. Puberty at 13 years and 9 months.

M., 18. At 15 I was medium height and weighed 110 lbs. Now at 18 I am 6 feet and weigh 170 lbs. Puberty at 14. Health good.

F., 19. Until 15 I was a somnambulist, since then restless. I had dyspepsia for a long time. Have outgrown it. At times have been more nervous since 12. Growth in height greatest at 14. In weight 17 to 18. Growth in height accompanied by deranged health, and I continued in poor health till I grew stouter.

F., 21. Greatest growth in height 16 to 19. I was not so well while growing. Was very small at 16 and grew rapidly. Grew in weight at 18. Puberty at 15.

M., 21. Health was not so good. Nerves and stomach. In 12 months, from 16 to 17, I grew 12 inches. Health not so good that year. Later I grew stronger all over. (Another exactly duplicates this growth, with weakness, but good health.)

F., 18. Grew most 12 to 14. I grew tall and thin and felt weak. Health not so good while growing so fast. Puberty at 13 years and 4 months.

F. I seem now a bundle of quivering nerves, I never get rested. Greatest growth 10 to 12 in height, in weight 15 to 20. Health not so good. Puberty at 15 years and 3 months.

F., 16. At 13 my nerves were affected very badly. Could not attend church for some time or recite in school. Grew in height 13 to 15, weight 15 to 16. Health poorer 13 to 16. Puberty at 13 years and 9 months.

F., 19. I grew rapidly from 13 to 16. It took all my strength and I was tired all the time. Could not get rested. Gained weight at 18. Health better at that time.

F., 19. At 13 not expected to live from chorea. After recovering from that I suffered from sick-headaches. They are becoming less frequent. Grew most rapidly 10 to 14, attended by poorer health. Puberty at 14.

F., 17. Eyes, nerves, head and stomach affected. Appetite not so good. Sleep better. Grew most in height 12 to 13, in weight 14 to 17. When growing in weight my health was not so good. Puberty at 15 years and 1 month.

F., 19. Have been very nervous since 12. Puberty at 14. Grew most 12 to 15. Health was much poorer. Back troubled me. Was sick in bed for a long time at 14.

F., 26. As a child was small and delicate, grew stronger. Increase in height at 13, in weight at 17. Period of rapid growth attended by poor health. I was weak, suffered with severe pains in head, back and legs. Puberty 11.5.

F., 32. Growth in both height and weight was greatest from 16 to 18. Health better at that time.

F., 18. From 15 to 17 I secured my greatest growth, which was attended by poor health, especially being very weak and tired. Puberty 16 years and 2 months.

F., 17. Grew fastest 10 to 12 and it was attended by poorer health.

F. My greatest growth was at 16. I had a long illness of over 21 weeks. When I was taken ill I was small, thin and short. After it I was as tall as I am at present, 5 ft. and 4 inches. Of course I was very thin and frail but I soon filled out and weighed 115 lbs. The first signs of puberty came at 17. It was after that long illness.

General Health, then and now. If imperfect, how, respecting eyes, nerves, head, stomach, etc.? Was sleep or dreams, or appetite for food affected?

There were 355 answers to this section. 255—105 M., 150 F.,

report good or better health 12 to 20. 100—32 M., 68 F., report poorer health.

The nervous troubles that may develop and the special diseases of adolescence have received careful attention.¹

The following list of diseases reported to have been outgrown is a long one and admitting mistaken diagnosis is very hopeful and valuable. Curvature of the spine, 1 F.; biliousness, 1 M., 1 F.; bad dreams, 3 M., 8 F.; eye trouble, 3 M., 2 F.; 2 cases laid aside spectacles; chorea, 2 F.; gout, 1 F.; heart trouble, 1 F.; headache, 3 M., 8 F.; nervousness, 2 M., 3 F.; stomach trouble, 3 M., 4 F.; rheumatism, 1 F.; chronic sore throat, 1 F.; insomnia, 6 F.; Bright's disease, 2 M., 2 F.; consumption, 1 F.

On the other side the following diseases developed, as reported in the returns. Spinal trouble, 3 F.; rheumatism, 1 F.; heart trouble, 2 F.; stomach trouble, 3 M., 15 F.; headache, 3 M., 19 F.; bad eyes, 4 M., 19 F.; nervousness, 1 M., 18 F.; bad dreams, 1 M., 9 F. The cases of Bright's disease were perhaps not genuine yet good physicians pronounced them so. Albumen often occurs in the urine in large quantities and may be mistaken for other difficulties though there may be no deep-seated disease.

The case of consumption is a remarkable one, of a girl in a wealthy family, pronounced by the best specialists in New York City to be beyond the hope of recovery. She went to a faith-cure doctor and fully recovered. The case is perfectly authentic and the parties are well known. The excitement and partial convulsion at the time of treatment, and her own faith, might have set free processes hitherto checked from development and the recovery came as a matter of rapid growth.

These cases show probably that experts may be mistaken in adolescent symptoms of disease and that the life forces will often push up and surmount the most alarming obstacles. It will be noticed how the appetite changes. 91 mention it. There is a physiological reason for it in the new growth and new demands from the system. It shows that the adolescent needs a large variety of food. It is painful to notice how many suffer terrible headaches from defective eyes and only find it out in the last years of school. It is a great cause of suffering and often prevents all school work.

A few cases will suffice to show the character of the returns on health.

F., 26. General health always poor. I never had but one full year of school (because of health). I found out this winter that my eyes made my headaches and glasses have cured them. The doctor says I should have worn them since I had the measles at 12.

¹ See Clouston, "Mental Diseases," and "Neuroses of Development." Also Langdon Down, "Mental Affections of Childhood and Youth."

F., 23. I had headaches caused by my eyes. Was very nervous. Nervousness increased the last year at school and I began to have hysterical attacks, laughing and crying without cause. These lasted over a year. Glasses corrected this very much.

F., 20. Health is not so good. Eyes, nerves, head and back. Got my growth at 13. Growth in height was accompanied by poor health. Puberty at about 14.

F., 30. I was thought delicate in early childhood, but at 14 I was robust, and at 20 hardly knew what pain or sickness meant.

F., 17. I was sick very much before 12. Had bronchitis and pleurisy for a whole year. Nervous at 13. Since then health good.

F., 20. Had gout at 15. Double curvature of the spine at 16. I was treated for it and cured. The right leg suddenly became much shorter than the other. I wore a high shoe for two and a half years. My back is straight but weak. My leg is all right but eyes trouble me. Until 19 I always had horrible dreams. I was going somewhere naked, or I dreamed of worms or dead persons. Now I dream of people I love.

F., 19. From 2 to 10 puny and lived wholly on milk. 10 to 16 appetite and health good. Since then I have had spells of nervousness and indigestion.

F., 19. Very small and nervous as a child. Health better since the beginning of this period. Outgrown sick headaches, etc.

M., 16. From 12 to 15 I suffered from headache and deranged stomach. Health not good. It is better now and I am growing fastest of my life. Puberty at 15.

F., 24. At the age of twelve had very poor health. From that time on I improved and since 15 have had perfect health.

F., 18. As a child always sick. At 12 I became a new person.

F., 18. Health much improved. Had weak eyes, now cured.

F., 19. Health better since puberty. I dream more but appetite much better. Grew tall fastest 11 to 13. Health very poor then. Had chorea at that time. Puberty at 13.

M., 18. Health good. My dreams as a child were horrible, such as falling from the sky down some deep chasm or chased by some animal. My appetite has undergone a great change. I like what I formerly disliked generally.

F., 17. Grew most rapidly from 12 to 14 in height and weight. This was a time of better health. My eyes grew stronger, I slept better, ate more, took more exercise out of doors and went to school regularly, while before I was at home a third of the time.

F., 19. When a child I was fond of all sweet things. Have changed and now I am fond of pure lemon juice.

F., 17. Health has been good for the past four years. Appetite changeable and I dream horridly.

F., 24. From 15 to 20 I had a strong repulsion to meat in any form.

M., 20. Health good but appetite changed. Things I used to like I cannot eat now.

F., 22. Since 12 I cannot eat turnip, cabbage, parsnips or bear the sight of apples or pears, of which I was very fond as a child at 6 or 8.

The question concerning changes in strength, activity and functions was not answered so definitely as some of the questions, but brought out two things clearly. One, everybody perhaps knows, that the muscles grow large first and strength comes later. The boy of 16 or 17, though equal in weight and all measurements of muscles to his brother of 20 or 21, is no match for him in a hard contest. Work and activity may be

demanded of a full-grown boy of 15 to 17 that should not be expected of him, and in fact which he cannot do without injury, since he lacks the strength he seems to have, or might be thought to have, from his size. The other point was the intense interest that girls take in gymnastics, judging from their own free statements. Anthropometrical statistics are now gathered so carefully in colleges for both sexes that farther study of this point can easily be made from these records.

F., 17. I want exercise. If I have it I feel as though I had made myself so much stronger and can work with a much better spirit.

M., 21. Increased in total strength by anthropometrical measurements from 417 Freshman year to 736 Senior year. Especial increase in arms, legs and lungs. That is, strength almost doubled from 17 to 21.

F., 19. I enjoy athletic games and out-of-door sports much more, and my love for work has increased, especially active work.

M., 26. From 13 to 16 I was most enthusiastic in athletic sports. Made sleds, coasted on a scooter, made snow-shoes, made other implements that took days of time, hunted, swam, gathered birds' eggs, played base ball, foot-ball, wrestled on stilts, captured and tamed flying, red, and ground squirrels. Played chess all the time for a while. All this with an enthusiasm unknown before or since.

F., 17. I have gained great strength in my shoulders and forearm in the last five years. I am fond of all kinds of sports, such as swimming, rowing, dancing.

F., 17. I am much stronger in all parts of my body. I play tennis and basket-ball a great deal.

Changes of Form and Feature. Did chin, nose, cheek-bone, brow, chest, hair, and other features change, and how? Was there a different facial expression? New resemblances? To whom?

There were 204 returns. 194—43 M., 151 F., gave changes of features. 10 said no change. Change of features is so common as the boy takes on the features of the man or the girl those of the woman that little is thought of it. There is a deep significance, however, underlying this change. The question of heredity is involved. In many cases there is a reversal of the type, the child showing at first the features and activities of one side of the house and later those of the other.¹

In all the many details of child-study there seems to be no notice of the fact that the growing child passes ancestral stages of inherited physical features. A boy of 7 illustrates the point. As a babe he looked like his mother. At 2 to 3 he was the childish image of her mother, while in the way he stood and in a peculiarity of falling he showed their traits. Since 5 or 6 he has grown to look very much as his father did at that age, and a photograph of the father taken when he was 7 is a good like-

¹ On change of features see West, "The Growth of the Breadth of the Face." *Science*, Vol. XVIII, p. 10-11. Also "Growth of the Body, Head and Face," (West) *Science*, Vol. XXI, p. 2-4. See Cope, "Origin of the Fittest," pp. 281-293.

ness of the boy at 7. He now walks and acts like his father. He will undoubtedly look like the father and the father's family. The explanation is this. Coming from the ancestral stocks on both sides are prepotencies which tend to reproduce their own types. The child of two strongly contrasted nationalities or families may not look like either or may follow one type or the other very closely.

The maternal type has certain prepotencies which struggle to maintain themselves. If they conquer before birth or from the start the child will resemble the mother. The same is true of the father. Now if they are closely matched in power there may be a destruction of both types beyond recognition or one may lead till the force of its prepotencies is exhausted, when the other, having gained strength because kept in the background, comes forward, perhaps to lead and decide the final type of features.

This final struggle and opportunity to establish the type comes at adolescence. A discussion of the meaning of this change of features will be given in the conclusion.

151 report a change of features to new resemblances. 20 M., 33 F., come to look like father, and 15 more girls develop features like a paternal uncle, aunt or grandfather. 83—8 M., 58 F., came to look like the mother, plus 14 F., who look like maternal aunt, grandmother, cousin or uncle.

M., 18. My chin has become more angular, cheek bones more prominent, brow not so smooth, chest increased, hair darker, nose sharp and prominent. As a boy I looked like my father but now more and more like my mother.

F., 19. Chin and cheek bones more prominent. Forehead fuller, hair darker, expression firm instead of babyish. I used to look like papa but now I look like mamma.

F., 18. My chin was sharp till 16 when it grew rounder. Nose same, cheek bones not so high, hair darker. I used to look like papa now like mamma. A stranger knew me lately for I looked so much like my mother to her.

F., 20. My face has changed from a round to an oval. Nose does not turn up so much, hair not so low on the forehead. As a child I looked like my father but now like my mother.

F., 22. My features have changed very much. I used to have a long, narrow face and every one said I resembled my mother. Now my face is round and all say I resemble my father.

F., 20. Formerly I resembled my father. Then I came to resemble my mother, who has an entirely different form of face.

F., 18. Chin longer, nose does not turn up as much, cheek bones more prominent, hair darker, look more like father.

F., 18. Features have changed a good deal. Nose from almost a pug has become a slight Roman. Did look like my father now like my mother.

F., 23. In appearance I have changed remarkably. One side of my face is now very much like my mother's while the other side is strongly like my father's. In form and build I am more like my father's mother and his family.

F., 17. Since 15 have resembled my mother, before that looked like no one in the family.

F., 18. My nose became higher on the bridge. My cheek bones more prominent, brow furrowed, hair darker, upper teeth larger and more prominent. Changed from resembling my father to a cousin on my mother's side.

M., 21. I am coming to resemble my father in every way of manner, form and feature.

F., 17. As a child was the image of my father. At 12 I began to look like my mother. The resemblance was the cause of frequent remark.

F., 19. My chin has become more pointed, nose has changed to a Roman nose, my cheek bones are more prominent, brow more convex and whole facial expression has changed. Have come to resemble my father.

F., 18. Chin longer and broader, nose was flat but now thin and pointed, brow broader, chest fuller and higher, hair darker, eyes lighter. I have changed to look like my mother and her brother. When a child all my features except my eyes were like my father's.

Closely allied to change of features is the cropping out of ancestral traits. Many returns show that where the features are reported as changing to resemble those of either parent or family there were traits developed like that side of the house. The question on ancestral traits was a minor one at the close of the long syllabus and not answered by many. Those received are suggestive of a wealth of material that may be collected along that line of research. A few cases will show the character of those returns. Over 50 were received.

F., 18. I have become more dreamy and have a habit of biting my finger nails as my mother, grandmother and two cousins do.

F., 17. Have many traits like father and grandfather.

F., 17. Given to day-dreams and have traits like my father. (She is one who spoke of features changing to look like her father.)

F., 18. Came to look like her father. Developed many traits like her father's family.

F., 18. From a little child she unconsciously added "e" to certain words, and was always obliged to overlook her writing to erase the unnecessary letter. This was exactly her maternal grandmother's experience in her girlhood, a trick which neither of them overcame till adult life.

F., 19. Ancestral traits have appeared. In my manner when angry, in keeping family relics and tracing family pedigree I am like father. I am also a vegetarian as he is.

F., 18. I am stubborn and willful like my Scotch ancestors.

M., 13, 17, and 24. (Reported by the mother.) There is a very decided outcrop of ancestral ways in each of these boys—physical peculiarities from their father's side as regards a tendency to nervous dyspepsia, voice, gesture, gait, etc. The youngest son is a second edition of his father. The boys have the same difficulty over spelling the same words that their father puzzled over, and even to this day misspells in hurried writing. Our oldest boy when small would, on going about, feel impelled to retrace his exact steps and return to the spot from which he had started even when in haste to reach his destination. This little trick was forgotten by 13. It belonged to the paternal grandmother and maternal uncle.

One question of the syllabus asked for changes of voice and coincident details. 111 persons gave definite answers. 103—43 M., 60 F., said the voice changed and gave details. 8—2 M., 6 F., said there was no change. Careless observers have not noticed the change of voice in girls, but it is quite as real as in boys. A girl's voice grows richer in tone but loses that quality in later life. The age at which the change of voice is reported by girls ranges from 12 to 17 as follows: 1, 13, 18, 11, 4, 2. That is, the most frequent years are 13, 14 and 15. The curve culminates a half year later than the curve for the time of puberty.

The age at which the voice changed in boys is reported from 12 to 18, with these numbers for each year, respectively, 6, 7, 8, 13, 10, 2, 1.

The largest number occurs thus at 14, 15 and 16. This is very near to the time given for puberty in the returns of boys. Since both are due to physical growth and are definite signs of physical maturity, they might be expected to fall near together. There was almost no one who reported any definite treatment of the voice during the period of change.

F., 18. Voice changed at 15. At first I could sing lower, then higher and finally only medium in height.

F., 16. Voice changed at 13. Became deeper and softer. No training.

F., 17. Voice changed at 13. Much lower in tone. Unable to sing and stopped.

M., 17. Voice began to change at 15. At a certain key it would break into a deeper pitch. No treatment. Fully settled at 16.

F., 18. Voice became stronger and deeper at 13, sweeter at 16.

M., 21. I sang tenor at 14. At 15 my voice was broken and I could not sing at all. It slowly developed into a deep bass.

F., 18. Voice changed at 12. It became squeaky and variable, then deep and I sang bass with the boys and about ruined it.

F., 17. Voice changed at 15. Was squeaky and odd.

F., 20. At 12 my voice would crack if I attempted to sing high. I gave up singing entirely. My voice is now lower in compass.

F., 20. My voice began to change at 14. I was treated by an Italian music teacher who gave me exercises in breathing.

F., 18. Voice changed at 13. Began in the upper register and went downward. Vocal training was kept up but the voice was not strained. The change lasted two years.

Another question asked for the age of the first signs of puberty with coincident physical and mental changes. This cannot so easily be determined in males but the answers were given with a wholesome frankness which shows that the taboo is off with people of good sense. False modesty about vital matters is fast going out of fashion as these replies indicate. 133—35 M., 78 F., answered the question. The girls gave the time of the first menses and the boys gave various indications that seemed to be conclusive.

The ages for males range from 12 to 18, as follows: 3, 8, 22,

13, 8, 0, 1. The average is 14.3 years. The largest number at 14. The girls range from 10 to 19. The number at each year was as follows: 2, 4, 8, 23, 22, 13, 4, 1, 0, 1. 13 and 14 have by far the largest number. The average is 13.6. These make a small contribution to the number of American cases previously reported. Roberts¹ finds 14.8 years as the average age of puberty of 575 American girls.

Dr. Kennedy² gives 13.7 years in the case of 125 American girls. Since the time of puberty varies with races who congregate in certain localities and is earlier in cities, the time varies for different places but the average is not far from 14.

The time of puberty for boys is usually given as about two years later than that of girls. The evidence so far received from comparative biology and from anthropology does not seem to me to justify this inference. These returns show about half a year's difference.³

In larger animals the male gains the reproductory function before the female, usually. With men the power of reproduction may exist some years before it is known. The signs of puberty given by males in these returns indicate full maturity at 14.3 years. Details cannot be given here but indicate that the reproductory function is present before discovered. Biérent thinks that nubility follows soon after puberty.

F., 22. Puberty at 19. I had reached my full height but was slender and unshaped. My skin was much broken out. After this I grew stouter, skin cleared up and bust developed.

F., 17. Puberty at 13. Modest, and blushed at everything. More nervous and timid.

F., 17. I experienced the first signs of puberty at 11. I was ashamed to go on the street for I thought every one would know about it. I asked my mother if people could not tell by my movements. I refused to go anywhere in this condition. I was much frightened the first time and did not tell my mother. It was several days before she found it out. I was ashamed to tell her. (Several cases like this.)

F., 24. Puberty at 12. At first a feeling of rebellion and then of responsibility. I felt older at first,—it wore off.

M., 26. Emissions began at 12.

F., 17. Puberty at 14. My form rounded out, complexion cleared, general health improved. I had a greater feeling of modesty and was somewhat nervous.

M., 27. Puberty came at 14. The whole time to 20 was a nervous and unstable period.

M. My first signs of puberty were dreams and phenomena in sleep two or three years before any marked external changes.

M. Was surprised at 14 by copious emissions.

F., 18. Puberty at 14.5. I changed in form, features, strength, appetite and health. Became more modest in my plays at school.

¹ "Physical Maturity of Women."

² Helen P. Kennedy, M. D., PEDAGOGICAL SEMINARY, June, 1896.

³ See Biérent, "La Puberté," pp. 21-70, for good discussion of the time of puberty and nubility.

Nervousness and blushing accompanied the change. I think I am less bashful.

M. Puberty at 14. Growth of pubic hair and organs. Later hair under the arms, and beard. More modest and nervous.

II. MENTAL CHANGES.

Senses and Thought. Are the senses keener, wider ranged? More engrossing? Is there a change from sense to thought; from the present to the future; the near to the far? What new *ideals*, abstract or personal?

225 returns to this section were received. 197—59 M., 138 F., say the senses are keener and wider ranged. 28—9 M., 19 F., think the senses are not keener, or are not certain about it. The first thought was that the apperception becoming wider ranged made the senses seem keener, as in the case of one girl who heard the church bell three miles away for the first time at 13 and since then almost every Sunday.

There is reason to think that the sense of touch is keener, since sex and touch are closely related. All of the other senses are modifications of the sense of touch. Czermak¹ following Weber concludes that children have a more acute space-sense than grown people since the sensory circles are smaller in children. Wundt² assumes it as proved that the sensory circles are smaller in children, but remarks that the number of nerve fibers does not change much, so that as the surface of the body increases in size the sensory circles must be larger to include the same number. Czermak's conclusion that children have a keener sense of touch is therefore not proved.

There may be an emotional accompaniment in adolescence which produces a keener effect from the same stimulus and thus amounts to a keener sense.

A few give experimental data on which they base the conclusion that the senses are keener. There are no data which cover a long period of years with the same individuals.

It is a matter of common observation that women depend much on the feeling of the hand of the persons to whom they are introduced to tell whether they like them or not. This use of touch is a racial development that has played an important rôle in history. We may trace some of our likes or dislikes to this cause.

Whatever appeals to the senses at this period passes over into meditation as never before. The life up to this point has been spent in the realm of the senses. It now awakens to a world of thought. The change may be very sudden and definitely marked. Thought in childhood deals more with isolated objects.

¹ Schriften I, 1. p. 305.

² Physiologische Psychologie II, p. 15 d.

In adolescence there is grouping of ideas and combinations never experienced before. Many of those sending returns say that life has a new meaning since they discovered the new relations of things.

F., 21. Everything in nature took on a new aspect of beauty at this time and appealed deeply to the senses of sight, sound and smell.

M., 19. Senses are much keener. Eyesight was keenest at 13 as tested by seeing a steeple in the distance. When I am alone my thoughts always go on to the future.

M., 19. Senses are keener, for I can see quicker and farther, smell very acutely and my skin is much more sensitive.

M., 18. My senses are keener, at least I can detect by smell any of the flowers I cultivate. My taste is also keener. Other senses I am not sure of.

F., 20. Senses are keener. I know that touch, temperature and pressure are keener. This by experiment. Can detect difference in pitch that I could not at one time. Smell and taste are "archaic" and not so keen. Sight keener. I see things that I did not notice before.

F., 17. Senses are keener. I see around me many things that I never did before. I take in and appreciate much more. These sensations cause much more thought.

F., 20. Senses are keener and more engrossing. A change from sense to thought. A simple thing will start off a train of thought.

M., 22. Thoughts changed from the near to the far, and to ideals and hero-worship.

F., 17. Senses are keener. Now I always hear the chimes three miles away that I never heard as a child. Touch is keener. I notice if a person's hand is smooth or rough when shaking hands.

172 answered the question regarding ideals. 165—77 M., 88 F., have had ideals, against 7 who say they never had ideals. These are probably mistaken as to the meaning or have forgotten, for "without an ideal man is no longer man." Early adolescence is the special time for the beginning of ideals. They change frequently. One's stage of development can be marked quite accurately by his ideal. The manners and ways of speaking, walking and dressing indicate closely the ideal that the boy or girl is following. Arrest in crude stages is unfortunate and frequent, judging from common observation.

F., 20. My ideal now is a strong character, self-reliant, courageous and sincere, who lives the true Christian life.

F., 40. At 12 I wanted to sing like Jennie Lind.

F., 33. A philanthropic ideal was developed at this time. It was suggested by a book on work among the poor. It became a waking dream in which I indulged every night before sleeping, forcing my eyes to remain open, although they ached from sleepiness. This ideal, then implanted, has never been eradicated.

F., 17. See less, hear more, live more in the future. Had imaginary ideals. First one was tall, slender, light curly hair, blue eyes, pink-and-white complexion, small hands and feet, dainty clothing with much pale blue about it, pretty dancer and graceful manner. Did not care what she had in her head. Now my ideal is an intellectual woman, unmarried, sympathetic, showing her brilliancy on occasion. The

steadfast, true, loving friend. A Christian, a musician, a writer, a housekeeper, a reader, an artist, a singer, a teacher. I care not how she dresses. She should have expressive eyes, dark hair and good features. One who is purified by trial and loses sight of self in others.

F., 19. I have two ideals, one real and one abstract.

M., 19. At 14 my ideal was to tend a soda fountain. At 16, for a year my ideal was to be a lecturer. I liked the idea of travelling and the importance of it.

M., 20. I have had many different ideals, first statesmanship, then the ministry, and now teaching.

F. Had an ideal. Did not try to be like my ideal but to seem like it to others.

F., 17. My ideal is a beautiful Christian character.

M., 18. A few years ago I wanted to be a pugilist and all-around-sport. Now I want to be a lawyer and orator.

M. I made heroes (ideals) of my older male friends.

F., 19. My ideals have been Washington, Savonarola, Socrates and the stoics.

M., 26. Had ideals at this age. Cæsar 8 to 11, then Webster, after conversion at 12, Beecher was my model. I intended to be a greater man than either. At 15 my ideal was an imaginary citizen of the universe.

Ideals awaken longings to be like the ideal. One of the characteristic features of adolescence is the deep longing. In slightly morbid cases like Marie Bashkirtseff, we get the full significance of it. She wanted to be "Cæsar, Augustus, Marcus Aurelius, Nero, Caracalla, Satan, the Pope, or all of them at once."

Here are some healthy cases.

F., 23. At 12 I began to quiet down. I shrank into myself, began to have day-dreams, was often lost in thought, that, although innocent in itself, I was ashamed to tell.

M., 25. Air-castles of all sorts, kinds and descriptions were dwelt upon.

F., 32. Longed for wealth and fame.

F., 18. I had a great longing to do right and to be well thought of.

F., 17. I dreamed of happiness caused by money, which I used to gain the title of philanthropist.

M., 21. I longed for and dreamed of unheard-of things.

F., 19. I have had deep reveries and longing. I often think how happy I should be if I could excel in some one thing I like. I have dreamed of being able and longed to sing like Patti, to play like the old masters, to write like Shakspeare. I have dreamed of going through college and becoming very learned—of becoming a missionary—of being rich and doing much to relieve the poor—to be good. I have longed to possess all virtue, absolute truthfulness and unselfishness.

F., 18. From 14 to 16 it was one of my greatest delights to sit down by the fire in the winter and build air-castles. I imagined myself in all sorts of high positions. It was hard to overcome this habit, but now I have no such tendencies.

F., 18. My longings many times have been intensified, and I have had a much greater tendency to reverie and dreaminess.

We are reminded of Longfellow's "Lost Youth:"

"The gleams and glooms that dart
Across the school-boy's brain;
The song and the silence in the heart
That in part are prophecies and in part
Are longings wild and vain."

These ideals, which are attained to in spirit almost at a bound, together with the new rush of ideas and the new soundings in the deep sea of emotion, render it impossible sometimes for the adolescent to talk easily. He feels important. In imagination he addresses large audiences or delights the circle in conversation. He feels even more keenly what the mature person feels, but when he comes to talk his motor apparatus has not acquired facility. Acquiring speech is a long process. A new life calls for new speech. It must be acquired often with painfully awkward effort.

The speech center and connected processes are easily thrown out of function by a nervous disturbance. The second dentition sometimes deprives the child of the power of speech¹ and they must learn it again, or it may cause stammering. Anger sometimes renders speech impossible. Deep emotion has a similar effect and enters as a prominent factor into this adolescent difficulty. It may be that in this dumb, bound feeling, we have another phase of nervous inhibition, since many nervous diseases are clearly associated with this period.²

Language. Was it harder or easier to express one's self, and was there a dumb, bound feeling? Was truth-telling harder or easier?

There were 346 answers. 262—72 M., 190 F., have experienced this difficulty. 82—27 M., 57 F., never suffered for want of words.

As to truth-telling, some found truth a necessity. The slightest deviation was painful. Some found it very hard at this period to tell the truth.

M. Not easy to tell the truth. Great imagination and desire to make a good story.

M., 21. From a confident singer and speaker as a child, I became very diffident and have hardly yet gained much power of expression.

M., 18. Find it much harder to express my thought, especially if it is something I feel deeply. Truth-telling harder.

F., 23. If a little embarrassed at 13 I found it almost impossible to talk.

F., 32. I have suffered much from that dumb feeling. I have a nervous dread of losing the words I want to say.

F., 17. Harder to express myself, especially if I feel deeply, then I cannot express it at all.

F., 28. Seems harder for me to express myself in words than ever,

¹ Langdon Down, op. cit.

² Cf. Clouston, op. cit.

for I hear others talk well and in trying to choose my language I find that the right words will not come at the right time. I do not want to use my baby language and so find it hard to say what I want to. If I used my old language I could say it easily.

M., 26. It was harder to express myself. Could this be from my using my receptive, rather than reproductive powers during adolescence?

F., 20. I have found it harder to express myself. That is, I have far more thoughts but cannot readily put them into words. The thought seems ready to burst forth, but the words will not come.

F., 19. Since 12 I have had a difficulty in getting the right word and so stumble in speech. It is a motor difficulty.

M., About 12 I had feelings too deep for me to express.

F., 17. The dumb-bound feeling expresses my condition exactly. This is true especially when I feel that a thing is so.

F., 17. At 11, when asked to describe Valley Forge, I had seen so much and had so few words, I could make but few statements about what I had seen.

M. I never can express myself easily, and at this time I did not want to express my thoughts to any one unless it was to a dog or horse.

M., 17. Very difficult to think and speak at the same time. Came to feel dumb-bound. Truth-telling always easy.

M., 21. Hard to express myself when with those who are not in sympathy with me.

M., 19. I find it hard to use good grammar when with my superiors.

F., 40. Felt dumb over the enjoyment of out-door life.

F., 28. From 12 to 18 I was fluent and never failed for a word. Criticism at 18 for use of language made me conscious and stumbling.

F., 32. Always a gift of gab—no dumb-bound feeling for me.

F., 21. Always easy to express myself. 10 to 12 a bad habit of lying. Very hard to break it. Tempted at times now.

M., 22. Expression became easier. Truth-telling was a kind of increasing necessity with an aversion to exaggeration.

Future. Were careers, plans, vocations, trades, etc., dwelt upon?

There were 462 returns. 369—167 M., 202 F., have planned the future, while 93—81 M., and 12 F., have not.

Closely connected with the widening of apperception, with the rush of new ideas, longings, and change of thought from near to far and change of ideals, is the tendency to plan the future. It is so common as to demand only numerical mention here and a few illustrations.

F., 18. As a child I dreamed much of the future. Wanted to be a musician, elocutionist, artist, milliner, book-keeper, dress-maker and a school teacher. Have often desired to be as beautiful in character as Christ himself.

F., 24. One of the greatest pleasures of my life has been to make plans and map out an ideal career.

F., 20. Planned to teach in early childhood. At 13 I began to declare it, and after much discussion my wish was granted, and I began to prepare for it, to my great delight.

M., 50. Nothing is more intense and vivid than my plans for the future. One scene. A high hill with bald summit. Had been blamed for something and went to that peak. Alone there I had a very deep and never-to-be-forgotten experience. I paced back and forth and said:

"Now I will, I WILL, make people like me, and I WILL do something in the world." I called everything to witness my vow.

F., 23. My plans for the future were all for literary fame. School aroused my ambition and for three successive years I took essay prizes.

M., 18. I look to the future. Think of myself as teaching, reading law, at the bar, in the legislature, an active speaker always taking the side of right and denouncing wrong. I have had many ideals, one to be a minister.

F., 19. I often think of the future and wonder what it has in store for me. I sometimes wish that ten years would pass in a night.

M., 19. Planned his future and painted it with the tints of the sea-shell.

F., 19. In mind I have planned the first day of school and gone through it many, many times. At one time I wanted to be a trained nurse. I pictured myself among the patients and how I would act in an operation. Then how I would study abroad and get a fine position.

Home. Did the attractiveness of home diminish, and was there a tendency to be out, go far away, strike out for self, seek new associations and friends? Should home be left part of the time?

Parents and Family. Did parental influence decline? How differently were father and mother, brother, sister, and other relatives regarded? Parental authority, punishments?

School. Was there a disposition to leave school, change studies, or teachers, defy authority, or to *feel* more deeply studies, punishments and discipline?

403 answered the question regarding home. 253—153 M., 100 F., had a desire to leave home and strike out for themselves or found home less attractive. 150—29 M., 121 F., had no desire to leave home.

107 thought that home should be left a part of the time, 20 thought it should not.

As to parents and family, 281 replied. 99—33 M., 66 F., said parental influence did decline, while 181—35 M., 146 F., found their parents just as dear and obeyed them as readily as in childhood.

100—32 M., 68 F., felt a disposition to leave school or did leave for awhile during this period. 192—98 M., 94 F., had no such feeling.

It must be borne in mind that these returns were mostly from Normal School, High School, Academy and College students, a majority of whom were away from home when they wrote.

75—34 M., 41 F., rebelled against the authority of home or school, during the adolescent years.

74—15 M., 59 F., say that punishment was felt much more deeply. 18—9 M., 9 F., experienced no change.

This gives a very true picture of the feeling of young people toward home, school, and authority at this period of life, because the answers were given under conditions allowing free speech and favoring home, parents and school. It is a very forcible illustration of the fact that a boy or girl from 12 to 18 is fully

conscious of personality and the rights of individual recognition.

This feeling that home is shut in and the desire to get away and travel, to see for one's self and form new associations, is an instinct as old as the race and common to all animal life. It is like the migratory instinct of birds. It may spring up suddenly with the most obedient and well bred children. It is not a sign of degeneration or of less love for the home or parents. It is often associated with the most intense love of home and family.

The feeling is strongest at 16 to 18 or about the time of the final approach of maturity.

The sudden feeling of rebellion against authority, which often surprises the child as much as the parent, is another instinctive habit of the race. These crop out in the best children, sometimes with a violence that shocks everybody.

It is not necessarily a bad sign, unless frequently repeated. The desire to leave school, together with the desire to leave home, is a true and natural impulse to adjust himself to the life which he is already living in his imagination in company with his ideals.

Sympathy, not punishment, is the proper corrective.

F., 20. Home not so attractive. Wanted to be away to care for myself. Always rebelled against punishment. Never wanted to leave school.

F., 19. I think that home should be left, for it makes one appreciate it. Home influence has not declined for me, but influence of parents has declined.

F., 18. I love my home, but have times when I want to go away and try for myself. Love my parents more. Often tired of school.

F., 20. Had a strong desire to leave home, but now would like to go back. Love parents more. Have once or twice felt defiant toward the authorities at school.

F., 17. Home not changed. Want to leave for a short time. Influence of parents declined. Have short times that I want to leave school.

M., 19. Rebelled against home and his father's authority. He was eager for school, but was forced to leave because he never knew his lessons, though easily superior in ability. His conduct was willful and positively unendurable at times.

F., 17. I grew very restless at home. When away from home I feel as if I could be perfectly happy at home.

F., 16. I did not love my father or mother till about 13. I thought them nice. I feel more deeply all reproof and have had times when I wanted to leave school.

F., 18. Home more attractive. Parents' influence stronger but they do not command at all.

M., 27. Attractiveness of home diminished. Had times that I wanted to leave school. Often wanted to defy authority. Crave sympathy.

F., 19. I used to be extravagantly fond of travel, now I don't care.

F., 17. Home is very dear, but I left it last year to strike out for myself.

- F., 24. I defied the teacher's authority at 13 and left the room.
 F., 18. Have defied authority at school and felt a secret pleasure in so doing. Often wanted to leave school. I craved sympathy.
 F., 21. Want to be at home, but have new friends. I like to be under authority. I crave sympathy.
 F., 19. At 14 I wanted to leave school and did so. Was out for six months and then went back with a new zeal.
 F., 20. At 14 had a great desire to break all rules of school simply because they were rules.
 F., 17. At 13 to 14 I wanted to go somewhere all the time. Home lost its attraction. I resented punishment and felt that I was not a child any more. At 14 I was tired of my teachers, studies, discipline, in fact tired of everything connected with my school life. (Now in Normal School.)
 F., 19. I have at times felt like defying the authority of the teacher from 12 to 16. Yesterday morning in chapel I had an impulse to rise and tell the speaker to be still. The thought of the disgrace that would follow frightened me so that I hardly dared breathe. I do not know why I felt so, for I respect the person highly.

Closely associated with this desire to rebel against home and school is the spirit of leadership. 171 very brief replies were given, mostly monosyllabic. It is a noticeable fact that a large majority of those who express no desire for leadership are girls. Many of them said they much preferred to be led.

81 M., 55 F., developed a spirit of leadership at puberty. 3 M. and 31 F. preferred to follow. The subject may be seen much more distinctly in the chapter on biography.

The success and buzz of organizations in the hands of the young people themselves illustrate this spirit of leadership in active operation.

F., 25. Leadership and independence unusually strong, but not a favorite with my fellows.

M., 18. Was very timid as a child. Now I like prominent parts in games or work. I never used to want to lead. Now I do not want to follow.

F., 19. I used to like to lead, but now I rather be led.

M., 27. I had at 14 a distinct spirit of leadership, again at 20.

M., 21. Independent and fond of leadership.

M., 21. Since 12 I have felt independent and would rather lead than follow.

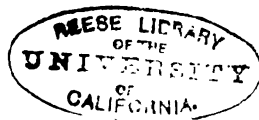
F., 23. Strong desire for leadership, while previous to adolescence I was very dependent and willing to be led.

F., 17. Before 12 always a leader. The girls asked me if they might play. Now I just as soon some one else would lead.

F., 21. Became more independent, but had streaks when I would like to lean on some one else.

Friends. Were there associations with older or younger; confidences, sympathies, cronies? Were friendships changed, deeper?

369 answered the questions. Of these 69 M., 158 F., total 227 sought the companionship of friends older than themselves. 51—10 M., 41 F., sought younger friends, leaving 91 who choose companions of their own age. 75 per cent. of adoles-



cents seek the companionship of those considerably younger or older than themselves.

The reason for this is sometimes given in the answers themselves, but often left to be inferred. One reason is a desire for sympathy and escape from the merciless teasing which they are so apt to get from those of their own age. This love of sympathy may account for many cases where boys in their teens have married women 10 to 15 years older than themselves. Another great reason for seeking companions older than themselves is the great desire to find out things about themselves and the relation of the sexes and facts about reproduction and other matters which are usually kept so carefully guarded from young people. Older people often speak more freely of these subjects and often drop a word which is eagerly caught up by the adolescent. It is a silent way of begging for information often unjustly withheld.

100 answered the question whether friendships were deeper or not, 96 saying yes and 4 no.

M., 20. Associations with older people. Do not crave sympathy, do not want any one to sympathize with me.

M., 19. I seek older associates because I can learn more from them.

M., 22. Best friends older. Don't like girls as well as married women, for the latter are more sympathetic.

F., 16. I crave sympathy and have older friends.

M., 21. I have great attraction toward older people, especially ladies over 30.

F., 17. All my friends are older, my best friend 4 years older. I crave sympathy and feel that the teachers might realize that we are far away from home.

F., 33. Companions older. I was more interested in my father's conversation with other men, and my mother and sister were much more entertaining to me when they were talking to their friends.

F., 18. I would rather associate with young people, unless the older people were talking about things I had no business to hear, then I preferred their company.

M., 16. Like older friends best. Love a girl of 23.

M., 36. At 13 my friends were women much older than myself. After 13 I cared more for men 10 or 15 years older than myself.

F., 19. I have always associated with older people. At 14 I thought more of the young ladies than the girls my own age. Many of my friends are ten years older than myself. I am rarely confidential, but every one confides in me. I never ask for these secrets. I am very sympathetic, often highly sensitive to the joys and sorrows of any one I like. I sometimes feel my friends' troubles more than my own. At other times my lack of sympathy is almost brutal. I am no actress and cannot feign what I do not feel. When it comes to real friendship I prefer men to women. They are more honest, broad-minded, generous, open, original in their opinions, ready to help when needed, appreciative, far more worthy to be trusted. I am an American. I am the oldest child, have studied psychology and know the meaning of these questions; am white, a Christian and a Protestant.

Love. How did feelings about the other sex change? Was a real

person first loved? Was the person older, idealized, how long did the affection last, how shown? Describe later loves.

This section was not very fully answered. 91 have frankly answered the questions. Of these 69—28 M., 41 F., have been in love before the age of 25. 22—11 of each sex, have had no love experiences. These answers were from young people from 16 to 25. 9—2 M., 7 F., have loved purely imaginary characters, and 49—3 M., 46 F., speak of passionate love for the same sex.

Any complete study of adolescence must needs deal with this subject, yet here it can have but a brief treatment. It is not an essential characteristic of adolescent psychology, but it is the time in life when it is natural for the sexes to be attracted to each other and to begin those attachments which ripen into love and marriage which forms the foundation for all that is pure and noble in our home and social life.

With well-balanced boys and girls the matter of love will come in its own good time and place. The mating instinct is strong, however, and will assert itself. The only danger is precocity. After the judgment and character are well formed there is little danger from this noble passion.

The love of imaginary persons is somewhat striking, but only shows that some one, oftentimes, must be loved at this period.

The love of the same sex is not generally known, but is very common. Without solicitation 49 cases have been reported. It is not mere friendship. The love is strong, real and passionate.

Many of the answers to the syllabus are so beautiful that if they could be printed in full no comment would be necessary.

F., 21. I had an ideal lover, older than myself, it still continues. Never changed regarding the opposite sex, always had a hatred of men.

M., 19. My first love was an ideal person. Did not last long.

F., 37. My first love was an ideal character and much older than myself.

F., 23. I fell deeply in love with a teacher at 17. I adored her and could not tell her that I liked her. I choked if I tried to. I lost that love quickly and for a very slight cause.

M., 21. A real person was desperately loved for the space of three months at nine. A second love came at 15. The affection was shown by personal declaration on both sides. She left town, when I am ashamed to say my devotion gasped once or twice and expired. Since then I have twice been desperately in love.

F., 33. At 14 I had my first case of love, but it was with a girl. It was insane, intense love, had the same quality and sensations as my first love with a man at 18. In neither case was the object idealized. I was perfectly aware of their faults, nevertheless my whole being was lost, immersed in their existence. The first lasted two years, the second seven years. No love has since been so intense, but now these persons, though living, are no more to me than the veriest stranger.

M., 21. Idealized a girl, love lasted only a few weeks. 2nd case, idealized, love lasted two or three weeks. 3rd, a teacher much older, idealized, lasted several years. 4th case, same age, slightly idealized, lasted a year.

F., 19. At 15 I had a time of writing poetry on love, due to falling in love with an older and superior girl.

M., 50. Then the girl-fever. There were two or three who were my ideal at different times. The first was five years older. "I would have eaten dirt for that girl for a year or two. She never mistrusted it. Never dared speak to her."

F., 19. At 12 I was promoted to a teacher with whom I soon became infatuated. I talked of her from morning to night. Remained after school, etc. From then till 17 I adored some teacher or other all the time. At 17 I was much in love with a girl six or seven years older. I consider such love sin.

F., 24. My first love affair was a very innocent and infantile one. At 15 I spent two months on the Great Lakes. The first day I noticed a young man in uniform who somehow interested me. We never got beyond the point of saying good-morning. Toward the end of the time I found myself blushing when he helped me into a boat, and felt my heart beat at the sound of his step overhead when he was watching. The next summer I felt a strong desire to have him love me. The third summer I spent hours every day in thinking up scenes in which he should declare his love to me.

F., 35. Girls between the ages of 14 and 18 at college or girls' schools often fall in love with the same sex. This is not friendship. The loved one is older, more advanced, more charming or beautiful.

When I was a freshman in college I knew at least thirty girls who were in love with a senior. Some sought her because it was the fashion, but I know that my own homage and that of many others was sincere and passionate. I loved her because she was brilliant and utterly indifferent to the love shown her. She was not pretty, though at the time we thought her beautiful. One of her adorers, on being slighted was ill for two weeks. On her return she was speaking to me when the object of our admiration came into the room. The shock was too great and she fainted.

When I reached the senior year I was the recipient of languishing glances, original verses, roses and passionate letters written at midnight and three in the morning.

Selfishness and Altruism. (1) Was there increase of self-indulgence, egoism, self-assertion? (2) More unselfishness, devotion to other persons or causes, with sacrifice of self?

285 answers were received. Of these 214—74 M., 140 F., replied that they were more unselfish and showed devotion to others. 71—26 M., 45 F., said there was a large increase of selfishness. The answers are somewhat unsatisfactory from a scientific standpoint because the young people hesitated to say that they were less selfish. I suspect that many of those who said they were more selfish would not be judged so by others. But some are intensely selfish as the records show. It is only a passing mood and should be outgrown. One case is reported of a boy who was so selfish that the parents and family were deeply concerned about him. The next year he was generous and noble. It is the great period in life for devotion to others

especially in self-sacrificing causes. Pledges, agreements, vows, and other restrictions on one's freedom, are made at this period with a joyous enthusiasm.

F., 18. Always unselfish. When mother gave me money to buy clothes I would give it away to some poor child I met on the street.

F., 18. More altruistic. Think selfishness is the meanest thing in the world.

M., 21. At 16 I grew very sympathetic. I feel deeply the trouble of others. My ideal is a pure life ruled by love alone.

F., 20. At 16 I was so altruistic that many times I gave my breakfast to a little girl that came around begging, and did not let my mother know it, and went to school without any.

F., 18. Feel much more selfish than as a child.

F., 17. Selfish by nature but for the last year or two, by thinking a moment, I became generous.

F., 17. I am more self-assertive. I have streaks of being unselfish and the opposite.

F., 24. During this period I have sacrificed my own pleasure to that of others many times. I have often stayed at home to let a younger sister go.

F., 18. I have spells of being purely unselfish.

F., 23. At 16 I became very selfish. I decided that it was no use to deny myself for others and have found it very hard to break the habit.

F., 33. About 16 I felt that I was important enough to be noticed anywhere. My conceit did not last long. I became more unselfish at this age. I began to help my sister which I had never done before. I performed even disagreeable tasks for her.

M., 20. I associated with those who were not good characters to try to bring them to a higher level.

M., 16. Increase of self-indulgence and self-assertion and also often of sacrifice for others.

F., 18. I am more selfish and hate to give up anything that will give me pleasure.

Were there impulses to reform self, others, religion, state, society, etc.?

Out of 149 answers regarding reform, 142—49 M., 93 F., have experienced these impulses. This feeling was very strongly seen in the biography also and is very characteristic of adolescence. The enthusiastic youth takes no account of the difficulties to be surmounted, but single-handed starts out to reform religion, politics, social customs and the wrongs of the laboring classes. The reforms thus achieved furnish a striking chapter in history.

O, would the soul might ever
Achieve its immortality in youth,
When nothing yet hath damped its high endeavor,
After the starry energy of truth!

—LOWELL.

Rivalry, jealousy and courage are often intensely displayed and are characteristics of the period.

F., 19. I have spells that I want to start a great reform.

M., 19. Had a great desire to be a leader and political reformer but it is dying out.

F., 19. I often have impulses to reform myself and others socially.

M., 21. My impulses to reform were very many and very strong.

F., 18. I have impulses to reform myself, society and institutions.

F., 18. I am more independent, and at times feel a spirit of rivalry and courage and want to reform self and society.

M., 25. Was independent, full of reverie, jealous and lacked courage at times. Impulses to reform the world and to invent were present.

F., 20. When sick at 17, I felt that I ought to organize a society to look out for tramps. Have felt that I should reform myself too.

F., 16. Strong feelings of jealousy. Impulse to reform.

F., 17. I have had a spirit of rivalry and a desire to reform society.

F., 18. Am very jealous, desire to reform everybody.

M., 19. (African.) Always a leader in spirit, dreamy, jealous, not very courageous, given much to reform of self and others.

Energy and Activity. (1) Were there spells of languor, inertia, laziness of mind or body; sloth in play or study, with great indifference of feeling to work or duty; and (2) spells of unusual activity, zeal, energy, work, interest, etc.?

514—170 M., 344 F., report spells of inertia of mind or body or spells of unusual activity. These show that the spells of energy and activity are affected by the weather, somewhat, but a large majority seem to experience these moods in all kinds of weather. It must have its explanation in the physiological condition at this period. The rapid growth and the unsettled condition of brain and muscle may cause unusual irritation of the motor centers or hyperæmia or anæmia of those centers and thus bring about these fluctuations in activity which in their intense form are distinctly adolescent phenomena. It amounts in many cases almost to cramp of the motor centers, judging by the amount of work some can do without fatigue when these spells are on, and the rapidity of fatigue at other times.

F., 18. At 13 I had spells of languor. Hard to work and it was not well done. Again I can do twice the ordinary labor. Can work all day with no sign of fatigue.

F., 24. At 16 I had such a spell of energy that I took the parlor carpet up, cleaned it, put it down and put all in order alone. Wrote an essay in this mood at 23 and it was criticised as not sounding original.

F., 17. In languid periods I feel as if I should like to lie down and sleep for a week. Again I do distasteful work with a real interest.

F., 16. The summer I was 12 I would stay in bed till noon and then sit around the rest of the day doing nothing. I have spells of activity that last a week, and do unnecessary work.

M., 20. Have had spells of languor. Brain seems totally inactive. Again something pushes me on and I know not how to stop.

F., 18. Spells of inactivity, at other times an overflowing of energy. Then I could accomplish an astonishing amount of work in a short time.

F., 19. At 14 there were times when I had a great loathing of any activity. Again felt like doing heavy work and craved it. I do not notice these spells now.

F., 19. About 17 I had a week that I was so stupid that I did not do any work and would not. That same spring there were three or four days that I could not find enough to do.

F., 17. This year has been characterized by alternate spells of languor and great activity. After working in these languid spells I feel as if I had been through a coffee mill.

F., 17. One time I had a spell of activity and swept and cleaned several rooms. I do not generally do much of such work.

Elation or Depression. (1) Were there spells of despondency, gloom, feeling of unworthiness or sin, with perhaps flitting thoughts of death and suicide? If so, state frankly and confidently the causes, cures, etc. (2) Were there periods of joy, elevation, spontaneous happiness? (3) How were feelings usually modified as to range, intensity, change, direction, etc.? Note especially *anger, pride and fear.*

766 answers were received on this section. Of these 285—85 M., 200 F., report spells of elation while 10 report no times of unusual elation. 471—237 M., 234 F., report spells of depression. The same 10 individuals who report no elation report also no depression, and generally those who report the one report the other also.

These moods, probably, have the same cause as cases of activity or inertia but are not contemporaneous with those spells. In no case were they so reported. Depression is usually reported as following soon after the period of elation. In only a few cases was it reported as invariably coming first.

Many report the common experience of feeling despondent on awaking, less so after a bath and toilet, cheerful by school-time and joyful at noon. The returns indicate a close relation between depression or elation and conditions of nutrition. These spells of depression normally cease at the close of the adolescent period. In morbid or pathological cases these fluctuations readily develop into melancholia or mania.

The saddest chapter of this study is associated with these fluctuations of moods. Thoughts of suicide are very common. 13 cases of attempted suicide are reported. 3 were successful in the attempt. Cases may be noted often in the papers. This point will be given farther discussion under the treatment of such cases in the conclusion.

Feelings are reported as being much more intense and wider ranged. Anger and pride are usually intensified, but kept under better control, while fear is usually reported as much less intense, except of a moral nature or fear of some secret disease. This latter fear was common and intense. The curve of despondency starts at 11 and rises steadily and rapidly till 15, and culminates at 17, then falls steadily till 23, where it reaches the base line.

The returns are very full. Space can be given to only a few of the briefer cases.

M., 15. I often have spells of despondency. Can understand a person's committing suicide. I have times of great joy and am pleased with everything.

M., 22. Subject to great extremes till 18. Have thought less often of suicide than before puberty, but very strongly at times. Chief reason for this was that I felt that people I liked, and especially my family, did not like and did not appreciate me.

M., 18. Have spells of great despondency at the thought of not being able to finish my education. I have been on the verge of committing suicide. I am sure I would have done so but for the thought of eternal punishment.

F., 24. From 12 to 16 I was subject to attacks of melancholy and misanthropy. Had a violent repulsion to any human society. An hour or so spent by myself out of doors would usually restore me.

F., 20. From 14 to 19 I had often spells of despondency. I felt very sinful and lonely. Wanted sympathy. This was just after a joyful mood.

F., 19. I have times of feeling very unworthy, with no cause, or when something has occurred to make me very happy. Again it seems as if I could shout for joy, just from the fact that I am living.

F., 17. Spells of despondency, I know not why. All right if I can cry. Feeling of intense joy.

M., 13. A boy came from school and said: "If I have got to get that geography lesson, I will jump into the pond and drown myself." Mother told him to go upstairs and lie down, thinking he needed rest. She followed him soon and found him hung by a rope that he had had there for some time. He was a good boy, fond of work.

Morals and Habits. What new moral motives, temptations, etc., and how were they met? Were there sudden feelings of right and wrong, deeper appreciation of both in self and in others; conscience and moral fears? Was any penance ever self-inflicted? How were dress, manners, etc., modified?

526 answers were received. Of these 240—73 M., 167 F., have experienced sudden moral feelings of right and wrong, against 16 who have not. 226—134 M., 92 F., have had a sudden impulse to correct any untidy appearance in dress, while 44—43 M., 1 F., report no change in dress or manners. The matter of dress seems to be an instinctive desire to irradiate the attention from sex or it may be due largely to the fact that the young person suddenly awakens to a feeling of maturity. Many things in the study indicate that all of the feelings of responsibility, of personality and worth become full-fledged at this time. This may account for the fact that the boy suddenly realizes that his shoes are not blacked, or his coat and hair not brushed, or his collar not of the latest pattern. This change is very noticeable in the grades in school.

There seems to come at this age a great desire to feel smooth. It is no doubt connected with the Roman and Grecian baths and the skin cults of history. Underlying that, is the feeling developed from pre-historic times that any roughness of the skin, —as pimples, hair, etc., is a relic of savagery and a conflict with the lower forms of life and the baser elements in one's own nature.

On the moral side there is a new and tremendous access of possibilities. The young person awakens to the fact that

he can commit crimes of which he never dreamed before. There are numerous expressions of intense surprise at the awful thoughts of crime that go rushing through the mind at this time.

The frequency of crime has been noted by Corre.¹

26—9 M., 17 F., report desperate criminal thoughts which in some cases required all the self-control of the individual to keep him from committing the crime thought of.

Self-inflicted penance for immoral conduct or disobedience or error was often reported. In a few cases it was severe.

F., 17. I have felt more the desire to do right because it is right. Feel indignant toward wrong and wrong-doers.

M., 19. First realized the meaning of "ought" during these years. Became very particular about dress and manners.

M., 32. I remember saying as a child "I will be good or diabolically bad." Extreme it had to be.

F., 20. Have often put upon myself penances for moral actions. I wore things I did not like or went without a favorite dish.

F., 20. Sometimes something suddenly tells me what is right and I feel very uncomfortable if I do not live up to this prompting. I earned money for a bracelet which I wanted very much. But I got angry at my sister, called her names, was sorry, and next day put all the money in the contribution box.

F., 17. I feel more deeply moral conduct. Once as a penance I walked six miles rather than take a ticket. I was dusty and tired on reaching home but felt better for the act.

M., 20. Have had all sorts of bad temptations, and my mother's influence has helped me to overcome them.

F., 20. I feel more that wrong is ineradicable. Can see how hard it is to do right and therefore appreciate it more. I feared at times that I had committed the unpardonable sin.

F., 19. At 13 I had a sudden change of dress. Never cared how I looked before.

F. Act now from a sense of right or wrong. Inflict penance generally by depriving myself of something to eat. At 13 I got into a perfect rage if anything aroused my anger. Now I control it.

M., 35. At 14 illicit desires began to show themselves. Strong temptations were safe-guarded by home training.

F., 20. Anger and pride were both marked at that period.

M., 26. My moral regimen was very severe on self. A Christian had no right to luxuries in dress, food, houses, etc. Refused to eat sauce, pie and cake.

¹ "Of 7,473 prisoners in France, in 1883, under 21 years of age, there were as follows:

Below 8 years of age 14 boys, 6 girls.

From 8 to 10 years of age 159 boys, 37 girls.

" 10 " 12 " " 425 " 117 "

" 12 " 14 " " 1,214 " 269 "

" 14 " 16 " " 1,739 " 409 "

" 16 " 18 " " 1,765 " 385 "

" 18 " 20 " " 714 " 209 "

Over 20 " " " 3 " 8 "

"Out of 26,000 evil-doers arrested in Paris in one year 16,000 were less than 20 years of age." A. Corre, *Crime and Suicide*, p. 309.

M., 26. Got hold of a lot of quackeries about the danger of emissions, which frightened me almost to death. I thought each was wasting my life and possibilities. This was terrible. I dreaded to go to bed at all. It was a tremendous relief when my brother said he was affected the same way. A doctor told me it was all normal. I had first consulted medical companies, who all tried to make me think my condition was deplorable in the extreme. If ever a set of men deserved to go straight to hell, it is these companies. I often contemplated suicide. I had no friend, was solitary as possible. We need plain instruction or a book which will tell young folks the plain truth about these matters.

M., 25. At 15 great desire to do just right and to help others. My greatest temptation was to give up everything, even my life, but the thought of my mother alone kept me from doing it.

F., 35. I had criminal convictions. I said: "I will not try to do right any more." The realization that it was possible to disobey was a distinct pleasure to me.

F., 33. About 13, while visiting, I was suddenly filled with thoughts of my own wickedness. It spoiled all my pleasure.

M., 21. Criminal thoughts and impulses were more than fitting at times and required all the self-control possible to deal with them. Even that could not eliminate the thoughts.

F., 24. Wanted to strike, kill, destroy and burn.

F., 17. I have a beautiful niece. One day, when she was sleeping, I had a sudden thought that I should like to kill her. It shocked me that I could think of such a thing. It was over in a minute.

M., 27. Had, after 14, a desire to hit some one or do some violent act.

F., 18. Thought of killing my father, mother and self all at the same time. Also of committing suicide. Wondered what the newspapers would say about it.

Religion. (1) Was there more inclination to pray, read scripture, hymns, attend church, confession, prayer meeting, and were there new feelings toward God, Jesus? (2) New inclinations to do duty, bear witness, influence *others* religiously, go on missions? (3) Were there *doubts*, questionings, need of new grounds of faith, or was religious experience desired? All this in full.

598 answer these questions. Of these 518—232 M., 286 F., report new religious inclinations between 12 and 25—mostly 12 to 20, while 80—60 M., 20 F., report no religious emotions.

More than 5 out of 6 have had these religious emotions. This proportion is too small, probably, for those who report no religious interest are mostly repulsed by some creed or dogma. The interest exists aside from the church. The returns show that religion before this age was a mere form. Now it becomes full of meaning. It is a new interest and very many speak of it as a sudden awakening. It is spontaneous, like the interest in art or music, or the love of nature. Where no set forms have been urged, the religious emotion comes forth as naturally as the sun rises. There are many doubts, but they all center around some doctrine insisted on by the church, which contains no religion at all. One does not see her way to be a Christian because she cannot tell which denomination is right.

- ✓ Another is repulsed by the doctrine of total depravity. Others doubt some phase of common belief. The Christian Endeavor is a good object lesson as to the value of giving adolescents untrammelled opportunity to serve God and perform religious duty.

✓ The missionary spirit is very strong. The desire to travel, to make new and wide acquaintances, to break with present surroundings, to sacrifice self for others, and especially to do all these in a religious cause, appeals with insistent force to the adolescent. A discussion of religious teaching will be given in the pedagogical conclusions.

F., 20. Have become much more religious since 12. Prayer means much more. God seems so real, kind and helpful. The perfect life of Christ is a helpful contrast to the life of men. I have desired to go as a missionary.

M., 21. A marked change in religious thought at 17. I think I was just ready for it, so it came.

M., 21. New religious feelings. Impulse to missionary work. Many doubts, but put them off till I could understand them.

F., 14 to 15 I became a Christian. I can give no cause for the change. I then seemed to realize for the first time all the truths that had been presented before.

M., 19. Grew suddenly religious in various ways, though not brought up religiously.

F., 18. I feel every year a greater dependence on some higher power. Religious feeling began to deepen and change at 16.

F., 20. At 13 I was very religious and prayed all the time. This all passed away by 15. I began to love God at 14, and about this time joined the church. I loved the service very much. For about six months I had a strong missionary spirit.

M., 21. I could not then and cannot now attend church or Sabbath school. I read the Bible twice each day and pray morning and evening. I look upon life as something glorious and admire all things good and beautiful, but despise to hear men harp on the weakness of humanity. If a preacher deals largely with sublime things, I enjoy it, otherwise not.

F., 18. Not religious. Do not go to church, but pray. Have desired religious experience.

F., 18. At 15 a new feeling toward God. He became a dear Father. I felt unworthy of His love. Felt earnest to work for the salvation of others.

F., 16. Religion was a form till now it has become full of meaning to me.

F., 18. I have had a strong desire to pray since 12. I never tire of praying, it keeps me close to God. My favorite song, "I am a child of a King." Can do nothing without God.

M., 21. Religious feeling deeper than before 12. Stronger inclinations to pray and to do missionary service to the poor. Need new grounds of faith.

F., 17. Since 14 a new religious interest. Have longed to go on missions since 16.

M., 35. Though I had no special reason for it I grew religious. Often alone I melted to tears at the goodness of God. I determined to lead a Christian life, prayed, found great joy, peace and change of life, and all that meant to me.

Nature. Was solitude more often sought and companionship of dogs, horses, pets, communion with trees, forest, sky, clouds, moon, wind, stars; was there greater love of flowers, colors, perfumes, bird songs? How otherwise was feeling toward nature in all her departments affected?

The total number of answers was 702. 640 of these—330 M., 310 F., expressed a real love for some form of nature, while 62—28 M., 34 F., were not fond of nature. Love of nature therefore exceeds everything else reported in these returns. Over 90 per cent. of those answering were lovers of nature.

No one form of nature seemed to predominate, but in all there was a longing to get near to nature in some of her forms. This love of nature in the time of its appearing, and the curve representing it, are almost the same as those of the religious emotions. It is really a religious instinct and the child is finding God through nature. It is a wide-open door to all religious culture.

The returns indicate that adolescents find a delightful and unique sympathy in nature. Nature seems to teach them rest and self-control. They flee to it as a refuge from all the elements that are warring within their own souls. To many it seems to be the very support of life itself. It gives a time for thought and meditation which the awakened soul now demands. Several associate these moments with nature, with divine worship. Others find strength in trees, moral courage in rocks, activity suggested by the waving of trees and running of streams.

The years when the feeling was most prominent range from 6 to 20. But the curve begins to rise rapidly between 11 and 12, culminates at 13, 14 and 15, falls somewhat at 16 and then rapidly till 20.

Record was kept of the animals preferred as pets with the following results:

Total number of votes cast,		230
	MALE.	FEMALE.
Dog, ...	21	45
Horse, ...	20	32
All pets, ...	8	31
Cats, ...	8	21
Birds, ...	5	21
Rabbits, ...	2	3
Squirrels, ...	2	2
Cattle, ...	4	2
Toads, ...	0	1
Chickens, ...	1	0
Tame rats, ...	0	1

Solitude was tabulated separately. 471 answers were received. 307—82 M., 225 F., were fond of solitude during the

years 12 to 20, while 190—133 M., 57 F., were not fond of solitude.

A striking fact is brought to light in returns from reform school boys of 13 to 16 years of age and also in returns from the poorer classes in cities, sent in by teachers. Of the boys in the reform school with over a hundred cases more than 90 per cent. were not fond of solitude. 90 per cent. of the girls also of these lower classes, children of foreign parentage, were not fond of solitude. On the other hand exactly 90 per cent. of the other returns were fond of solitude. The biographies of great men show that they have invariably been fond of solitude. "Talent is perfected in solitude." This would seem to indicate that love of solitude is a good index of mental ability. It shows the presence of a mind capable of entertaining itself.¹

Disraeli writes:² "Solitude is indispensable for literary pursuits. No considerable work has yet been composed but its author, like an ancient magician, retired first to the grove or to the closet to invoke his spirits. Every production of genius must be the production of enthusiasm. When the youth languishes, and feels himself among crowds in an irksome solitude, that is the time for him to go into seclusion and meditation. Where but in solitude can he indulge the fine romances of his soul? Retirement to the frivolous is a vast desert, to the man of genius it is the enchanted garden of Armida."

The curve for solitude is something like that for nature. It ranges from 8 to 25 but begins to rise rapidly from 11 to 12 and culminates at 14 to 15, then falls rapidly and steadily to 20. The intense love of solitude naturally falls thus entirely within the adolescent period.

F., 21. At 13 nature became a real, almost human thing to me. It seemed to respond to a cry for something higher. In the study of it I found sympathy and relief and the germs of higher ideals in the conception of life.

F., 24. I seemed to live through the winter for the sake of the summer when I could return to outdoor life. I felt a passionate attachment to the earth and all things growing on it. I always felt them as a part of my own personality. This was strongest from 8 to 14.

M., 19. Began to like to go out in the woods in rains and storms and to walk alone on very dark nights.

F., 23. One Sunday afternoon, at 14, I stole from the house to the orchard, climbed up into a tree, sat there and dreamed for an hour. I felt as if I wanted to be alone. The same year I was sent through a piece of woods, and found it so beautiful I sat down at the foot of a tree to enjoy it. One night, at 13, I felt a strange thrill of companionship as I gazed at the moon.

¹ Another interesting item with the boys in this reform school, which occasions all sorts of suggestions, is the fact that they almost invariably dislike dogs.

² *Curiosities of Literature*, p. 136.

F., 17. I have spells when I feel that I must be alone. I think of the past and what I will do in the future. Or I watch objects in nature and think of God. I watch the stars appear one by one.

F. When I was about 13 I enjoyed more than all else to be alone in the woods and fields. I spent hours sitting beside a little brook near my home, and sometimes a whole afternoon in the woods, studying the mosses or vines on some knoll under the trees. Liked pets, and my dog was always with me. Liked to study minute plants and see them at different times of the day and note the changes.

M., 35. The love of solitude, that has been sort of a passion with me, began rather suddenly in my sixteenth year. Sunday afternoon I would go to some quiet nook and indulge in semi-religious or philosophic thought for an hour or so. Then the mood would pass rather suddenly and I would return in quite a different state of mind. Ready for a romp by the time I reached home. Preferred to hunt alone. Under the influence of the silent and over-arching trees I felt a strange, light, soothing melancholy. In the early twenties I developed a fondness for twilight walks in which I indulged in philosophic reveries.

F., 18. At 13 I was attached to a horse and would stay with it by the hour. It got lame and was to be sold, but I cried so it was kept. At 14 to 15 I had a great desire to wear flowers every day.

F., 18. At 14 fond of the stars. Liked to sit alone and look at them. They tell me of God. One night, at 15, feeling sad, I wandered to an old bridge and stayed there for hours. The beauty of the hills, the changing lights, the eddying waters, so affected me that I could not contain my feelings any longer, and leaning my head on the bridge I cried. Soon a feeling of peace stole over me and I went home.

F., 18. I have felt that trees, flowers, and birds understood me. Have hugged a tree and almost worshipped the moon. Intense love of colors and perfumes of flowers.

M., 18. Spend whole days alone in the woods. Like to go alone or with my dog, on horseback, in lonely places. Very fond of these two pets. Enjoy communion with trees and nature in general, but not sky, clouds or moon. Loved flowers as a child, but the love has greatly increased. Their purity and form appeal to me now, whereas it was only color. I have the highest ideals and purest thoughts when I am alone in the fields, mountains, or among flowers I have cultivated.

F., 20. From 12 to 14 I went often at sunset to a wood near home to remain through the twilight. I studied the clouds and thought that the obscuration of the stars was a sign that I was evil.

F., 17. There are a few times that I feel that I must be alone. When sad I like the trees for company. They give me a restful feeling. I have a stronger love for flowers and natural scenery.

F., 18. Before 12 I was uneasy if alone. At 13 I began to like to go to the woods alone. We had company once, and I felt so lonely that I left them to be alone.

F., 40. At 9 I felt the charms of nature no words could express. "I had run through the scale of human experience in most ways at 13 and was like an old woman." "Nothing in later life has seemed so beautiful as the mosses on the rocks where my father carried and placed me at six or seven."

M. The beauties of nature have always seemed the chief part of life. Not fond of solitude.

F. Liked solitude about 15. Preferred seclusion from all friends to review the past and plan for the future.

M., 18. I was greatly moved by a beautiful scene in nature at 15. I could not go on to my destination, but stayed there all the forenoon.

F., 21. Since 18 I have loved to be out in nature for the pure enjoy-

ment of it. It is pure delight to lie in the grass and look up in the blue sky, either in its perfect blueness or when fleecy clouds are floating about. Never liked poetry on nature because I had no feeling akin to it.

M., 46. Enjoyed the forests and big rocks. Liked to fish and hunt. Had a resort in the ledges near home. Liked to ramble in the woods near cliffs and streams. Enjoyed a bright landscape in summer, when it seemed alive, moved by a gentle wind. I think I always considered the world as God's world and had some thought of Him.

F., 20. She showed few signs of love for nature except for a horse on which she lavished her maiden love. He was beautiful and gamy. She was allowed to drive him when he was all a good man could handle. He was always kind with her. She spent many, many hours in his stall, combing his mane and foretop, braiding them at night, etc. She sobbed wildly when he was sold.

F., 17. I love the wind, it brings a message from God to his child. If despondent I love to walk alone in the wind, it brings me comfort.

M., 24. Since adolescence I like to be alone often. Nature teaches me such profound lessons. Trees seem so mighty to me.

F., 24. I seek solitude more since 13 and much more since 18. I seek communion with trees, sky and stars. I consider them my dearest friends. The sky consoles me when in trouble.

F. From 12 to 13 I cared for no company but that of nature. I had a seat under an oak tree in a small field surrounded by woods and near a small brook. Every day for nearly two months I would sit there and wonder at the beauty of nature which I had never noticed before. Birds, brook, trees and sky all seemed to be my friends. They soothed me when other things annoyed.

F., 18. There is nothing I like better than to be alone for an uninterrupted time of thinking. I love all nature very much better. I woke up to the fact that everything in nature is beautiful when I was eleven.

F., 21. After 14, when my adolescence began, I had a change of feeling toward nature. I loved to get up early and take long walks alone before breakfast. Liked to watch the moon and stars. Loved flowers and wore a large bunch when I could get them.

F., 34. Grew fond of nature at 19. Sorrow sent me to the trees for sympathy.

F., 27. Ever since I was 12 I have preferred solitude a part of the time. This was strongest at 14 and again at 19.

M., 16. I liked pets, to hunt in the timber, to watch the sky, clouds, stars, or any natural object.

F., 37. When young I loved companionship. As I neared maturity I sought to be alone. Would roam over the prairies or sit dreaming of the mysteries of the sky, heaven and earth or of great possibilities. I dearly loved everything in nature.

F., 19. My feeling for nature grows deeper. For six years I have been passionately fond of the woods, sky and flowers. Am fond of dogs, horses, and pets generally.

F., 18. I find exquisite beauty in all of nature's work. I feel a deeper and increasing love for nature and a helpfulness, too, in it all that I did not know a year ago.

F., 20. Love to sit alone in the twilight and dream. It seems as if the moon and stars could sympathize with me as no one else can. Two years ago I came to love animals. Did not at all before. I have a peculiar sensation when I go into a great wood. It seems as if one were very near some great power, unseen but felt, and even the birds and squirrels seem to have wise thoughts about you. You involuntarily speak to them.

M., 26. I became more fond of solitude. The mystery of the world, the key to unlock it, some holy grail to harmonize me and the world were sought. The open secret of nature seemed just before me but always slipping away. The world was strange and refused to become familiar. I was a wanderer in infinite time and space.

F., 35. At 8 we were in the fields. I can remember the intense sensual pleasure from the sunshine and colors. Then there was an unaccountable, overwhelming perception of beauty that carried me away beyond the point of self-control and I ran to my mother crying, only answering that it was so beautiful. Another time at 15. I was running down a hillside to meet my sister, miles away from any dwelling, in a deep wood. I stopped with a feeling of awe. There came over me that strange, self-annihilating realization of that beauty which my soul at once named God. I felt that I had perceived God. I had been in his presence in a real sense. From that time God and religion, as I used them, had a deep and vital significance.

Art. How, if at all, was feeling for paintings, or pictures generally, affected? Was there more interest or in different kinds? How differently did music affect you? Was it felt more and did taste change? Architecture or drama, etc.? Was an artistic career contemplated?

Art and music were tabulated separately. 472 answers regarding art were received. Of these 361—176 M., 185 F., experienced a new feeling for art in the adolescent period. 136—77 M., 59 F., noticed no change in relation to art.

The returns indicate that 50 to 75 per cent. of young people may have a time when they are deeply moved by the artistic, and the per cent. is very large of those who decide upon an artistic career while this fervor possesses them. This desire usually lasted only a few months or at most a year or two. It is not a sign of unusual artistic ability, but the new, impulsive emotional nature is awakened for the first time to artistic possibilities. It is the mind's way of unfolding. Next year it may be music, and art may be very distasteful.

The change of taste in art was regularly from bright-colored pictures of children or people or animals in action to quiet pictures of still life or nature. Several adults still feel that a picture is defective unless there are persons in it.

In the years 14 to 18 many spoke of loving only those paintings which represent deep feeling or portray the soul of the artist, such as "Breaking Home Ties," and the "Madonnas." The curve for the love of art begins at 10, rises rapidly till 12 and falls steadily after 15, reaching the base line at 20. It is one of the first awakenings of the adolescent mind.

566 answered regarding music. 464 of these—215 M., 249 F., have had an increased love of music, amounting in very many cases to a passion, which, however, soon passed away. Only a small per cent. still desire to make music a profession. 102—62 M., 40 F., experienced no change in their musical taste. The curve for love of music corresponds almost exactly to the curve of love of nature. It starts at 10, culminates at

15 and falls rapidly after 16. Numerous cases are reported where everything was given up to music for a year or two and then it was dropped. They say themselves that they were never equipped by nature for a musical career.

F., 20. Contemplated a musical career, 15 to 16. I imagined myself the greatest musician in the world. I could see the audiences fairly spellbound, hear the applause at the end and see the handkerchiefs wave. Now it is all past.

F., 19. I always meant to be a great artist. At 17 I purchased an outfit and began. The spell soon passed away.

M., 22. Deep and discriminating love for pictures came at 18. Enjoyed architecture. Music greatly disturbed me as a child and always made me cry, yet I liked it.

F., 18. I am fond of painting. Long to be an artist. Music fills my soul with rapture. Experienced a great change for wall-paper, architecture, and everything artistic.

F., 23. At 13 I used to dream of being a great musician. I never had any aptitude for it.

F., 18. I grow more fond of art and music. Have thought that I would like to be an artist, but really have no talent for it.

F., 22. Took great delight in pictures. Pulse quickened at the sight of a fine painting. Music often made me cry.

F., 18. I see the soul of the artist now in the picture.

F., 19. From 8 to 12 I liked pictures of birds, boys and girls. Now I like pictures in which there is sentiment. I feel music very deeply, it often makes me cry.

F., 23. At 15 decided to be a musician. Saved all my money to go abroad to study. It lasted only a few years.

F., 18. At 13 I longed to be a sculptor. That passed and now I long to be a musician.

F., 21. Love of melody and rhythm began to decrease and the possibilities of music as a means of expression has developed into an intense love of the musical drama.

F., 18. In our house hung Angelo's Madonna. I hated it and would make terrible faces at it as a child. At 15 it suddenly struck me with a beauty that nothing else has ever made me feel. The Madonna came to be my ideal. Taste in music changed from that with a strong rhythm to quiet, soft, dreamy music. At 7 I was to be an artist, at 13 a musician, at 15 an artist again. Now neither of them.

F., 17. Like landscape paintings. As a child I wanted to have persons in a picture. Do not like music.

F., 17. I used to like pictures of children in action. Now I like classical work.

F., 61. I adored pictures, paintings, and longed to be able to make them myself. I loved dreamy music and at that age would have given worlds for an opportunity to learn music.

Literature. What change was noted in reading? What different authors? What poets, novelists, essayists, historians, biographers, orators, books of travel, etc., were preferred? Was poetry or other literature written? Enlarge here. What literature and what character appealed most strongly?

523 full answers were received. The taste of those answering was evidently influenced by the literature taught in their schools.

Yet as these returns came from 20 States, stretching from Maine to Utah, the results are certainly significant. 453—223 M.,

230 F., have had what might be called a craze for reading at some time in the adolescent period. 70—24 M., 46 F., have noticed no difference in reading. Love of reading is even more noticeable in the case of the biographies studied than in the returns.

Parents seldom realize the intensity of this desire to read. Those who feel it and are not provided with reading, some of which is even sensational in the best sense of the word, may take up the worst kind of sensational reading. It is the golden opportunity to cultivate the taste and inoculate against the worst forms of the reading habit. The curve of this intense desire to read begins at 8, rises to 10, and then rapidly from 11 to 14, culminates at 15, then falls rapidly, nearly reaching the base line at 18.¹

M., 26. Never had any liking for poetry. Could not commit any of it without changing the words to destroy the metre. Read Shakspeare but did not like it. I was a voluminous reader of all that came in my way.

M., 22. I attempted to write poetic prose and unpoetic verse. Read romance, Kingsley, Scott, Irving, Brontë, then Curtis, Dante, Schiller and Shakspeare. All English Literature, as a study in biography and history, led to a delight in historic study and analysis of poetry.

M., 32. At 14 to 15 read the life of Napoleon. It made an immense impression on me. I tried to dress and act like Napoleon, copied dozens of pictures of him.

F., 21. From earliest childhood I have been an omnivorous reader of everything but trash. At 13 I was tolerably familiar with the whole range of current novels. And these, plus history, poetry and encyclopedias, furnished all my education till 12. I keep a novel on my study table, and an occasional half hour's reading preserves the balance in college life.

F., 18. Used to like fairy tales. Now my favorite is *Les Miserables*. A passion for poetry followed that for art and music.

F., 18. At 13 craved history and religious literature, then novels and plays. Had a craze for the opera. Used to write poetry at 13. Now literature pertaining to God and nature appeals to me most.

M., 18. As a child I was delighted with fairy tales and characters in action only. Became a great reader of fiction and poetry at the adolescent period.

M., 19. At 16 I got the idea that I was to be a great novelist. In the garret I wrote great works. Some of them had titles like "The Black Hand," and "The Lost Lover Reclaimed." I pictured countless admirers.

F., 19. Like to read Longfellow for his sympathy. Great admiration for Milton and Shakspeare and Lew Wallace.

¹ A record was kept of the authors read and preferred. Of poets, Longfellow led more than two to one, having 237 votes, Tennyson 125, Whittier 104, Shakspeare 72, Holmes 53, Bryant 43, Mrs. Browning 21, Lowell 16, Wordsworth 15, etc. Of historians, Bancroft and Macaulay had most votes. Of novelists, Scott had 126, Dickens 112, Alcott 89, Eliot 64, Hawthorne 46, Roe 35, Stowe 24, Cooper 22, Lyall 21, Thackeray 17, Lytton 17, Lew Wallace 16, etc. Novels received 812 votes, poetry 797, essays 67, history 37, travel 30.

F., 17. First liked fairy tales, then novels, then books of travel. Wanted to write stories, tried and failed.

M., 35. My poetry period extended from 20 to 23. I read all of Burns' poems, much of Wordsworth, Byron, and Shelley. Also some of Moore, Mrs. Browning, Coleridge, Lowell and Longfellow. Lyrical and nature poetry were most interesting.

M., 21. Longfellow's Bridge is my favorite. It is very dear to me.

F., 61. I read everything I could get hold of indiscriminately. I wrote poetry, essays innumerable, and many stories, but destroyed the most of them, sent occasional papers to some periodical, and do not remember having any returned as unworthy of publication, but they never suited me, and when printed I shrank from acknowledging myself as the author.

F., 23. I was allowed to read just what I chose, and chose to read everything I could get at 13. For two years it was a great passion.

F., 19. Like poets best. They came in this order. Whittier, Longfellow, Bryant, Shakspeare, Wordsworth. Hope sometime to enjoy Browning.

F., 23. I read *Ivanhoe* many times at 13, so that I could repeat pages and pages of it. Passionately fond of *Roe's* novels at 14. Poems of nature, especially Scott's "*Melrose Abbey*," and Tennyson's "*Saint Agnes Eve*," and Longfellow's "*Legend Beautiful*," were imprinted on my memory never to fade. Whereas poems studied and recited as tasks have all faded.

Science. Was there more interest in botany, zoölogy, physiology, astronomy, chemistry, geology, physics and other natural sciences? Tell some details.

381 returns were received to this section. 290—122 M., 168 F., liked the sciences. 91—31 M., 60 F., disliked them. A record kept of those preferred shows the following votes for the various sciences :

Total number of votes cast, ... 543

	MALE.	FEMALE.
Botany, ...	30	111
Zoölogy, . . .	24	84
Physics, . . .	37	42
Physiology, . .	24	44
Astronomy, . .	24	43
Chemistry, . .	14	30
Geology, . . .	14	16
Physical Geography,	0	6

M., 22. I naturally liked sciences, but a series of teachers whom I disliked caused me to avoid them and get interested in something else.

M., 20. Very fond of natural history and making collections. Have sat up till nearly morning, I was so interested in studying Physiology.

M., 35. From 14 to 16 curiosity regarding my physical nature became very intense. I had a deep sense of mystery. This was increased when I learned that our senses do not report correctly the outer world.

F., 17. A growing interest in science. Wanted to take more than chance offered. What wonders do they reveal to us!

M., 19. At 19 I developed a passion for rare specimens of rocks. Spent hours in old stone quarries. It lasted three weeks. My folks called it another fad.

M., 26. Was interested in Chemistry, Physics, and Botany. It never occurred to me to notice the flowers. It was the book work I wanted. Zoölogy, my present specialty, I did not begin till 23.

F., 17. At 13 I had a passion to study astronomy. I said I *would* study it when I was older.

M., 22. At 14 I had a retreat in the barn where I collected and arranged stones, shells, woods, etc. Would spend hours there. I mean to be a teacher of Botany and Zoölogy.

F., 19. Botany and Chemistry at 16 were liked much. Sciences led my thoughts up to God.

F., 18. Biology produced a great reverence for God.

F., 19. Astronomy first opened my eyes to the boundless glory of the heavens, awakening the first deep realization of a Supreme Being.

Philosophy, etc. Did any teaching or study of philosophy, morals, psychology, æsthetics or logic help you personally; if so, what ideas, and how? Did it make or help doubts?

A large number of those who answered the syllabus had never studied philosophy in any form. 194 had studied philosophy and answered the question. Of these 167—34 M., 133 F., have been helped by the study of psychology and ethics. 27 thought they had received no benefit from it. More than six to one had doubts removed by the study of philosophy.

The following typical cases show the general character of the returns and many of the benefits received.

F., 18. The study of Philosophy and Psychology opened new lines of thought and gave broader views.

M., 22. All struggle with doubt came before I studied Philosophy. This served to straighten me out.

F., 24. Psychology has helped me in habits and understanding of children. It has cleared up many doubts.

F., 18. Psychology has helped me form better habits, increased my observation, made me love children more, given me valuable hints on teaching, made me desire to live a better, more cheerful life.

M., 18. Psychology has helped me to understand myself and the Bible and has removed many doubts. The theory of evolution when I saw that it did not contradict the Bible, strengthened my belief in it. The study of habit shows the value of repetition.

F., 21. Philosophy at 13 was destructive, awoke doubts that I could not answer. Made faith impossible. I could not feel assured of anything. Storm and stress. Studied Kant and Hegel and became a Christian through the ethical life thus developed.

M., 20. Psychology has given me an idea of the wonderful work God has created in a human being. Taught me to understand man, animals and a child better.

F., 17. Psychology has made teaching a sacred profession. A teacher must be cautious in her methods and example. It has shown the power of habit, made me observe others, judge less, deepened religion, shown me what a child is, explained educational principles, use of apperception, developed the study of the individual, development in natural order, thoroughness in primary memory. Made me care more for my fellow students, given a desire to study, helped me know myself, shown me how little I know.

F., 24. Psychology has helped me to understand myself, to see the relation of man to the universe, to run our emotions into right channels, and make the body the instrument and friend of the soul. It has removed doubts about God.

CHAPTER II.

BIOGRAPHY.

There is a two-fold difficulty in the way when we attempt to gather adolescent facts from biography. In the first place, few writers of any kind have noted the distinguishing mental phenomena of this period, although savage tribes have noticed it for centuries. In the second place biographers would find it extremely difficult—at the time of their writing—to ascertain with any accuracy the adolescent qualities.

The adult person seldom recalls much of the emotional life of his early years. This can be gathered only from diaries, notes, or the recollections of others. A friend may be impressed with the passing mood or condition of another and retain it longer than the one who experiences it. Even the best observers of youth can see but a fragment of what is passing in the soul of the adolescent. It is only when there is an eruption or expression of the feelings that others are made aware of their presence. Since this comes as a surprise to the parent or friend, it may be retained for a long time, while the youth passes so rapidly from one thing to another that he soon forgets particular phases.

A few autobiographies give very full details of early life. Among these Tolstoi's is one of the best. His record is that of a strong, healthy character. Others are more highly magnified but are of more doubtful value for scientific study.

The writer became much interested in a few of these, and undertook to bring together the scattered rays of light from many historic lives. After reading a large number it seemed best to select 200 whose early lives were quite fully described and 100 or 50 others from each of the following classes: Pioneer settlers in the west, home and foreign missionaries, actors, artists, poets, musicians, inventors, scientists, novelists and professional men. In all, one thousand have been noted and studied after reading a much larger number.

It may not be too far afield to say here that biography in quantity is quite different from the biography of an individual. One good biography may be very interesting but it is solitary, like a shoot that has grown alone from the ground. A hundred or a thousand are like a large and beautiful tree. The balancing of part to part, the relation of each to each, the beauty and symmetry of each and all, make a majestic whole. After read-

ing a few carefully, a hundred or more skimmed rapidly must prove intensely interesting and very instructive.

I shall first present the results of the 200. They were taken at random from all classes. The list includes statesmen, professional men, business men, explorers, inventors, mechanics, scientists, publishers and others. The attempt was made to make this list as widely representative as possible.

In tabulating the results of the study, therefore, no one rubric would have an advantage, unless we consider that those whose lives are written are prominent and we might expect them to be more interested in literature, science, art, poetry and nature than the average life. The average life, probably, would show like results of less magnitude. Humanity is one, and in those who have had better advantages of nutrition and care in youth, education, experience and help in later years, the common qualities are more fully developed. No new ones are acquired.

The following points have been noted and the results shown below in graphic form. By "nature," "art," "music," etc., we mean an unusual interest in these subjects. Most people like to read, but under literature we have scored only those who had a passion to read everything in reach at sometime before twenty-five years of age. The same is true of the other rubrics. Poetry includes none who wrote merely a few verses but those who wrote good poetry, most of which was published. Under science we have recorded those who had a deep love for it in adolescent years. The other headings will explain themselves and will be more fully understood in the short extracts of the lives given below.

Of these 200 cases then, though often very incomplete, we find 109 recorded as being lovers of nature in adolescent years. Most of these included the love of solitude, as a desire to be alone with nature. 11 were solitaires. 53 have had a passion for some form of art or music. It may have lasted only a few days or weeks or it may have lasted for years.

120 have had a craze to read. 58 wrote poetry. The average age when these 58 wrote poetry is almost 15. The most frequent year is 13.

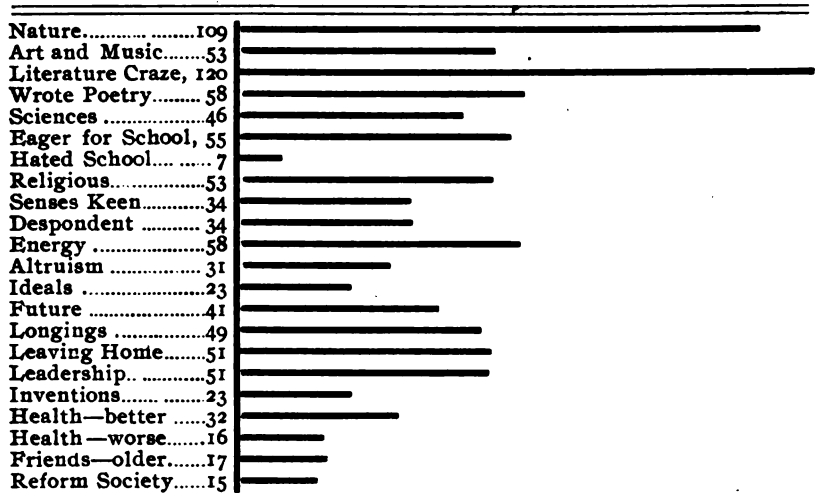
46 were fond of sciences. 55 had a great desire to go to school. 7 hated school. Of 34 it is said that their senses were very keen and they were good observers.

Deep religious emotions are mentioned in case of 53. The years spoken of as the times of deepest emotions and the largest number of conversions are 14 to 18. The average is 16 for conversion or uniting with the church. The largest number is at 15. All of these were boys.

34 have had times of great despondency. 58 mention times of great energy or unusual activity.

31 have shown great unselfishness and devotion to others in the years 12 to 20.

23 make mention of ideals which they imitated. 41 have spent much time planning the future. 49 had deep longings. 51 left home before 20 years of age to support themselves. They often broke with home authority. Average age about 16. 9 showed a deeper love for home. 51 evinced marked leadership in their teens. Useful inventions were made by 23. 32 spoke of better health after puberty. 16 had poorer health. 17 had some friend much older, one had an intimate friend much younger than himself. 15 wanted to reform society. The other points tabulated are so poorly reported that they are not worth mentioning. All the above facts have reference, of course, to the years before 25, mostly 12 to 20. This can be shown graphically thus :



The above chart must not be taken as showing any definite facts. For out of the 200 only 120 report on any of these points noted. 15 is the least number used. If the whole facts could be discovered the result would doubtless be modified very much. It remains a significant fact, however, that out of 200 famous men and women, the biographers should take notice that in their teens so many were lovers of nature, solitude, sciences, etc., and at times, at least, so many had spells of devotion to music, art or literature. This table should be compared with the total returns, which come more nearly from the average boy and girl. Any movement will be towards the normal, as these figures change toward those of the returns.

The following glimpse into the lives of famous people shows the adolescent phenomena, and when read together they give a picture of what any youth may—and most youths do—pass through to a greater or less degree.

It may serve to enable the general reader to recognize adolescent facts in literature if we give them here, briefly, in one group.

Savonarola was a solitary, pondering, meditative boy. He felt deeply the evil of the world and need of reform. He spent a whole night planning his career at twenty-two.

Shelley was unsocial, solitary, and indulged in wild fancies, walking by moonlight alone, gazing at stars and moon. He was deeply attached to a man much older than himself.

Henry Ward Beecher was intoxicated with nature. In college days he "drank in those deep draughts of nature that have been the inspiration" of his life.

Goethe was deeply in love at fifteen. He showed a remarkable attachment to his sister and was full of wild dreams and longings.

George Eliot had a passion for music at thirteen and became a skillful pianist. At sixteen she was religious and founded many societies to help the poor and care for animals. She had fitting spells of misanthropy.

Edison attempted to read through the Detroit Free Library, and read fifteen solid feet before he was stopped.

Robert Drury had at eleven a passion to go to sea. Nothing could restrain him.

Seward refused to recite one day in college and left the room.

Tolstoi says in his autobiography: "Did you ever happen, dear reader, at any period of life, suddenly to perceive that the aspect under which things appeared to you had undergone a change? That everything you had seen up to that time had suddenly taken a new and perfectly unfamiliar appearance?" And again: "I have read somewhere that children between twelve and fourteen years of age—that is the transition stage from childhood to adolescence—are especially apt to become murderers or incendiaries. When I recall my own adolescence (and the state of mind I was in one day) I can understand the incentive to the most dreadful crimes committed without aim or purpose, without any precise desire to harm others—done simply out of curiosity, out of an unconscious need of action. There are moments when the future looks so gloomy that one fears to look forward to it."

Much to the surprise of the family he became furiously angry one day. After that he said: "I had a dim consciousness that I was lost forever. . . . I thought there must be some reason, unknown to myself, why everybody hated me." "I am perhaps not the son of my father." This notion seemed even probable. It consoled him. He resolved to thank his father and depart, then sobbed at the idea.

About seventeen, for a year, he was very solitary, thinking on the destiny of man, the next world and the immortality of the soul. It occurred to him that death was always at hand. He cast aside his lessons and spent the day lying on the bed, eating gingerbread bought with his last money.

"I would fancy myself some great man, who had discovered new truths for the good of humanity," yet "was too bashful to meet common people calmly." This illustrates how the emotional life awakens.

"The virtuous thoughts which we had discussed had only pleased the mind, had not touched the feelings of my heart. The time came,

however, when these thoughts returned to my mind with such fresh power of moral revelation that I took fright, thinking what an amount of time I had been wasting, and I resolved that very second to apply these thoughts to actual life."

Tolstoi had a deep religious experience at seventeen. He wept for joy over the new life. He had a period before twenty when he told "desperate lies," for which he could not account. About twenty he had a passion for music, and a little later for the French novel. (These scraps give but a faint idea. His adolescence should be read by all interested in this subject.)

Rousseau had an unprecedented love of history at nine or ten. His emotions were very impetuous. Of himself at sixteen he writes: "I was very uneasy, discontented with self and everything else, weeping without cause, sighing I knew not why."

Keats experienced a great change in his nature at fourteen. "Genius clouded his life and made him solitary." Mabie says of him: "There comes a time in the life of a boy of such gifts when the obscure stirrings become more frequent and profound. The imagination no longer hints at its presence but begins to sound its mysterious and thrilling note in the soul. There is no other moment so wonderful as this first hour of awakening—this dawn of the beauty and wonder and mystery of the world on a nature that has been living only the glad unthinking life of the senses." "It came to Keats in his fifteenth year." "It came with that sudden hunger and thirst for knowledge which consume the days with desire as with a fire, and fill the young heart with passionate longing to drain the cup of experience at a draught." He was "at the morning hour when the whole world turns to gold." "The boy had suddenly become a poet."

Chatterton was too proud to eat a gift dinner when nearly starved. He wrote good poetry at an early age, and suicided at seventeen for lack of sympathy and appreciation.

John Hunter was very dull and averse to study. About twenty his mind seemed to awake and he soon became an expert in anatomy.

Wm. Jones reproduced "The Tempest" from memory at twelve.

Patrick Henry when about fifteen "chose to pursue his sports alone rather than in company and would sit by the hour under the shade of a tree watching his line floating upon the quiet waters, the bait untouched by a single fish." He woke up about twenty.

Alex. Murray, at fifteen, in one and one-half years, acquired almost unaided the Latin, Greek, French and Hebrew languages and read several authors in each.

Mr. Gifford (Pub. of Quart. Rev.) was restless and discontented because he had nothing to read. He went to sea at 13. Bound out to a shoemaker, he beat leather smooth and with an awl worked late at night on algebra. At twenty he says: "I had a period of gloom and savage unsociability. By degrees I sank into a kind of corporeal torpor, or if roused into activity by the spirit of youth wasted the exertion in splenetic and vexatious tricks, which alienated the few acquaintances which compassion had yet left me."

Rittenhouse at fourteen, when plowing, covered the fences with numerical figures. "He held the plow and thought of infinite time and space." "Every pebble and flower taught him a lesson."

Benj. Thompson had a passion for sciences about fifteen. Fond of experiment. His fire-works exploded while he was trying to make them, and he was badly hurt. At seventeen he walked nine miles and back every day to attend philosophical lectures at Cambridge. At nineteen he married a widow of thirty-three.

Franklin at twelve had a passion to go to sea. About thirteen he

read poetry all night. He wrote verses and sold them on the streets of Boston. He doubted everything at fifteen. He had a wandering spirit and left home at seventeen. He started the first public library in Philadelphia before he was twenty-one.

Robert Fulton was poor, dreamy, fond of nature, art and literature. He had a mercurial temperament. He determined to be a painter and showed talent, but gave it up for poetry. He left home at seventeen. He invented many valuable things besides making the steamboat.

Samuel Bowles planned and started the Daily Springfield Republican at eighteen.

Bryant was a very precocious boy. His health was poor till fourteen when he changed to permanent, good health. He was a devoted lover of nature and began to write poetry at nine. From twelve to fifteen he was deeply religious and prayed for poetic genius. He wrote *Thanatopsis* in his eighteenth year.

Jefferson was passionately fond of nature and animals at fourteen. At seventeen he studied fifteen hours a day.

Garfield, though living in Ohio, said: "Mother, you don't know how I long for the sea. I want to see something of the world." In after life the sight of a ship gave him a strange thrill.

Hawthorne wrote poetry early. He had a passion for the sea. "I should like to sail on and on forever and never touch shore again." Of his life, about fifteen, he wrote: "How well I recall those summer days, when I roamed at will through the Maine woods. It was there I got my cursed habit of solitude." He was haunted with an idea that he would die before twenty-five.

Lowell was very fond of birds and flowers.

"Dear common flower that growest beside the way.

To look at thee unlocks a warmer clime.
The eyes thou givest me
Are in the heart and heed not space or time."

Peter Cooper was altruistic from eighteen to twenty, and said: "If I get rich, I'll build a place where the poor boys and girls of New York may have an education free." He left home at seventeen.

Whittier, at fourteen, saw a copy of Burns' poems, which excited him very much. "It changed the current of his life."

Howells wrote an essay on human life at nine. He was on a newspaper from twelve to fourteen, and worked till 11 P. M. and was up at 4 A. M. to carry papers. About fifteen he saw Longfellow's poems. His soul was "filled with this new, strange sweetness."

Aldrich describes his adolescence in his "Story of a Bad Boy." He had a museum of animals, a pet pony, and was a leader and hero among the boys. He published a volume of poems at eighteen.

Holmes had a passion for certain flowers. He wrote poetry at fifteen. He said: "I have the most intense, passionate fondness for trees in general, and have had several romantic attachments to certain trees in particular.

J. T. Trowbridge learned French, German and Latin without assistance before twenty-one. He read Scott, Byron and Moore, and longed to write. He composed as he held the plow, and slyly wrote it in the evening.

Joseph Henry, at ten, followed a rabbit under the Public Library at Albany, and found a hole in the floor that admitted him to the shelves. He took down a book. It was a novel and excited his interest, and, unknown to everybody, he read all the fiction in the library. He suddenly stopped and began Physics, Astronomy and Chemistry. He developed a passion for sciences. He also had a passion for the stage and became

an amateur actor. (He was afterwards President of the Smithsonian Institute.)

J. C. Downey came from Ireland at fifteen. He went south at seventeen, west at nineteen. "His mind was full of visions of broad acres." He settled at Los Angeles.

H. H. Boyesen was deeply inspired by nature and thrilled by the idea that he was a Norseman. He had several hundred pigeons, a lot of rabbits and other animals. He loved to be in the woods at night. When the hour came to leave home for school, he was found, after a long search, with his arms around the neck of a calf, to which he was saying "good-by." He could not leave his pets.

Maxwell, at sixteen, had a horror of destroying a leaf, flower, fly or anything.

Jahn writes: "In early life there grew in my heart an inextinguishable feeling for right and wrong—the subsequent cause of my inner weal and outer woe."

Nansen's thoughts "were more to him than his dinner." He ate a bad egg while in a brown study. "Unstable in his studies." He was very fond of sciences at fifteen. His temperament was inflammable. He had deep longings, great courage and altruism. "While I was in my teens I used to pass weeks at a time alone in the forest. I disliked any equipments for my expeditions. I liked to live like Robinson Crusoe, up there in the wilderness."

T. B. Read had a passion for reading from twelve to thirteen. He ran away at seventeen, painted, acted, and wrote poetry. He published a volume of poems at twenty-six. He became a successful painter in oils.

Cartwright heard voices from the sky at sixteen—"Look above." "Thy sins are forgiven thee."

Spencer suggests the loss of the emotional nature in speaking of his completed life-work. "Doubtless in earlier years some exaltation would have resulted, but as age creeps on feelings weaken and now my chief pleasure is in my emancipation." His early desire was to be a civil engineer. He entered on that career at seventeen after one idle year. He gave it up for lack of employment at twenty-five and began his literary work. He never went to school. He was for three years a private pupil of his uncle.

Sir James Mackintosh was fond of history at eleven. He fancied that he was emperor of Constantinople. He loved solitude from his thirteenth year, wrote poetry at fourteen, fell in love at seventeen and began his literary work at twenty-three.

Thos. Buxton had a great love for dogs, horses and literature. He combined these by reading while riding on an old horse. At sixteen he loved a literary woman. It aroused all the latent powers of his mind. He resolved to do or die, and took thereafter every possible prize in school.

Webster was fond of nature and solitude. At fourteen he could not rise to speak before the school.

Scott began to like poetry at thirteen and forgot his dinner reading it. His father sent him to school to study law. He slyly kept poetry and novels in his desk.

Newton was fond of solitude, and at thirteen introduced the paper kite. He tried farming at sixteen, but with no success. He wrote poetry in his teens.

Pascal learned geometry at twelve, alone and contrary to his father's command. He wrote a treatise on conic sections at sixteen and invented his arithmetical machine at nineteen.

Nelson went to sea at twelve. At fifteen he commanded a boat in peril. That same year he left the boat to fight a polar bear.

Joseph Banks, the great botanist, was idle and had no interest at thirteen. About fourteen, he was bathing with other school-boys, came out late, walked home alone and was so struck by the beauty of the flowers by the wayside that he at once started his great career.

Montcalm and Wolf both distinguished themselves as leaders in battle at seventeen.

LaFayette came to America at nineteen, thrilled with the idea of our bold strike for liberty.

Gustavus Adolphus declared his majority at seventeen and soon was famous.

Ida Lewis rescued four men in a boat at sixteen.

Grace Darling, at twenty-two, rescued nine men, when others would not put out.

Joan of Arc began at thirteen to have those "visions" which were the inspiration of her life.

In making the above study my attention was attracted to the early age at which actors won renown. I decided to study a hundred actors and compare them with a hundred of a different class. This proved so suggestive that the study was extended and the results are given below.

The list of actors which we shall consider here includes the most famous that have appeared on the American and English stage in the eighteenth and nineteenth centuries. The age when they made their *débüt*, or at least showed to the world that they had remarkable talent, has been taken and shown graphically in the curve below. The average age of the first great success of these hundred actors is exactly 18 years. The range is 6 to 28 years. A few who were almost born on the stage, and who played before five years of age, are not recorded in this list. The endeavor has been to take those who were attracted to the stage voluntarily. However, a few were sons or daughters of actors and knew no other life. These at some time showed independent ability and that age is taken. Many of them appeared as amateur actors long before they were recognized as stars.

A study of the curve shows at once that this talent is not an intellectual product but a matter of the feelings or emotions. In other words actors are born, not made. They inherit the necessary qualities. They reflect the emotional life of the age. Nearly one half of these were Irish or of Irish descent. England and Wales furnished most of the others. The pure American stock has furnished comparatively few great actors. We seem to be cold and unfeeling. It may be, however, that the American youth have had so many diversities that the emotions have been scattered along other lines.

The curve shows that few make a success on the stage for the first time after 22. From 16 to 20 is the time to expect talent in this line. The second rise of the curve may apply to another distinct class of actors who act more from the intellectual

and less from the emotional standpoint. The same may be noticed in the curve of poets and missionaries—a rise after the general fall. The long life of many actors, and the wealth of feeling displayed even to the last, shows that the emotional nature, if cultivated, need not be lost in later years, as it seems to be in many lives.

I have placed on the same line with actors the curve of a hundred novelists. I took the age of the publication of their first story that met public approval. It is fair to compare it with the curve of actors, for their curve represents the first success.

The difference is striking. One is a product of emotion, the other more of the intellect, or intellect touched by emotion. While 90 per cent. of actors were famous before 22, only 4 per cent. of novelists wrote acceptably at that age. This would indicate that the merely emotional novel fails. Education, observation, and a close study of human life and character seem to be required to write successfully. The actor has the intellectual product before him. He must feel and interpret.

Miss Porter, Miss Alcott and Miss Phelps are among the earliest novelists. The list is taken mostly from American writers, for, so far as possible, I have chosen to study our own life and times. The curve is a poor one, for it needs a larger number of cases. The exact dates are given, however, so it is correct for this hundred cases. The dips mean only a lack of numbers. The average age of these writers at the time of publishing the first novel is 31.65 years. The range is 12 to 51 years.

The next curve shows the time of publishing the first poem or volume of poems by 53 different poets. The curve is influenced by the fact that some did not publish till long after they had written well. It shows, however, that the emotional, adolescent quality enters much more into poetry than into the novel. The average age of first publication that showed talent is 18.1, thirteen years younger than the novelists. The range is 9 to 50. The 58 above noted in the 200 wrote poetry at 15 on the average. None are included in his list of poets, for only a few of them were poets. All of these 53 wrote much earlier than 18. The time of first publication is taken so as to compare it with novelists.

With the curve of the poets I have placed a curve of 50 inventors, taking the age of their first patent. There is not much poetry or emotion apparently in inventions. It requires cool, intellectual work, touched by enthusiasm. The average age is 33.8. They range from 18 to 55. The younger ages are not associated with the most valuable patents.

The next pair of curves show the greatest contrast. They are 100 musicians, mostly Europeans, and 100 American men from the three professions—law, medicine, and theology.

Musical talent cannot be compared with anything else in this study. At first it seems to be closely allied to poetry or art. I made the mistake at first of classing them together. They are totally different. Ole Bull at the age of three was filled with music. Others could be cited. The motor development necessary for expression needs to be gained and the musician is full-fledged. We must look back to the remote past to account for this talent of music. We find that animals are strangely affected by music, some agreeably, others not so. Savage tribes are peculiarly susceptible to the rhythm of music. There has been developed somewhere in our history a deep response to the elements of music. It may be that the high musical art of to-day is an adaptation of this primitive quality to the culture and intelligence of the age. The young musician is often from a family of no musical talent. He seems to have developed to a wonderful degree the musical germ which is latent in us all.

The age of first showing rare musical talent is not easily found in biography. This list has been verified from different sources of information, where it was accessible, and the result is approximately correct. Like all the curves, it does not pretend for a moment to be absolutely exact. A much larger number would fill up the dips and make minor changes. I doubt if the general character of any of these curves would be greatly modified. The dips mean nothing. There is a tendency in biographies to avoid certain odd numbers, especially 19, as these curves will show. A general, continuously curved line should be thrown over these cutting the points and passing above the hollows.

The average age of these 100 musicians at the time when they first showed remarkable talent is 9.92 years. The range is 9 to 20. Only about one-half of them had musical parents, so far as the record shows. 95 per cent. showed rare talent before 16.

The age of 100 professional men when graduating from the professional school, is 24.11 on the average. As these were men of the preceding generation, the age is earlier by two years, probably, than of men who graduate to-day. Ten years should be added, without doubt, to this average to mark the point of recognized success. This would place them close to the novelists and inventors. The professional men were all men of renown. In all but a few instances they were college educated. Only 8 per cent. began their professional work before 21.

The next curve shows the age of the development of the artistic ability. 53 artists were taken, mostly American. 90 per cent. of them showed talent by 20. The average age is 17.2. The range is 6 to 30. 50 fall between 10 and 23 years. The curve is very close to that of poets in time of development.

They seem to be different ways of expressing similar emotions. Many of the poets in this list were artists, and many artists were poets.

With that may be seen the curve of 50 missionaries. It represents the time of departure to the field of service. The curve is not so significant as the "Student Volunteer" movement and the Christian Endeavor. These show the enthusiasm and the altruistic, self-sacrificing, religious zeal of adolescence in a remarkable way. The Y. P. S. C. E. would make a valuable study in adolescence.

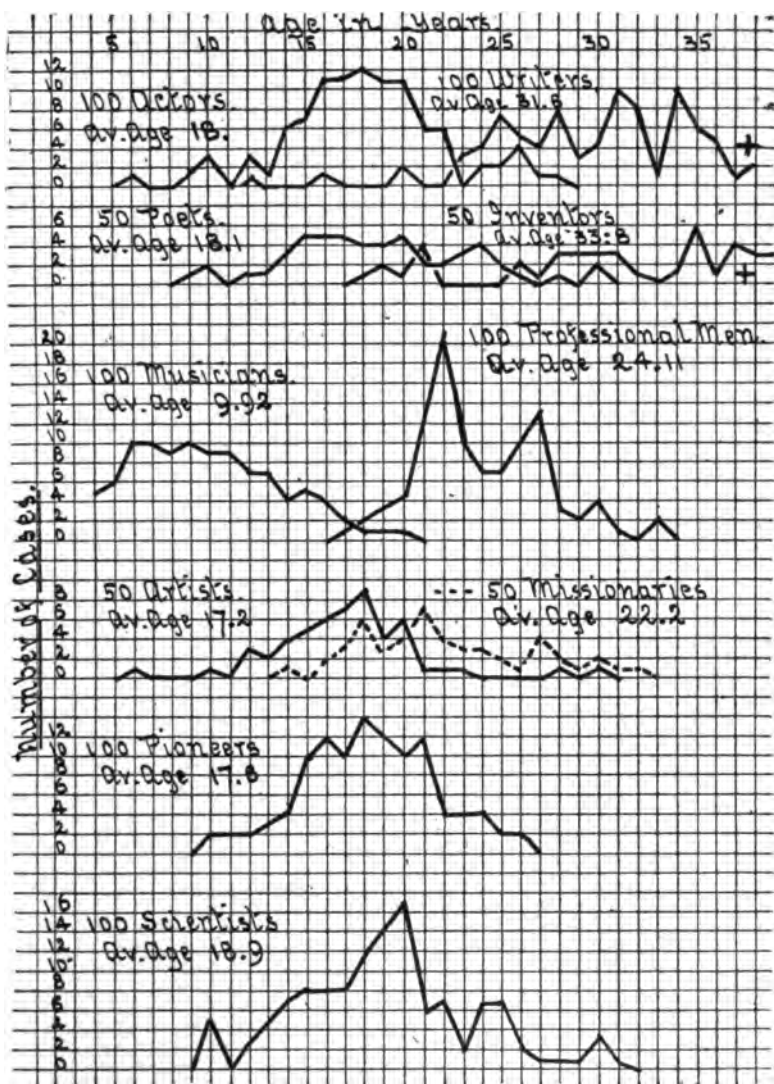
The next curve represents graphically the ages when 100 pioneers, who have made their mark on the civilization of the far west, left their parents and home to seek a fortune amid the dangers and hardships of the unknown land beyond the Missouri River. We get its import only when we consider what it meant sixty years ago to cross the prairies in "schooners," in constant danger from Indians, fires, etc., into an unknown and barren tract. Yet we find these boys leaving home at 17.6 years on the average. The range is 10 to 26 years.

The last curve is that of 118 scientists. So far as possible I have taken the age when their life interest first began to glow. It has been hard to determine this exactly. I suspect that in many cases the real age is a few years younger than I have indicated. The dips in this curve, especially, are not significant. 18 of these are taken a second time from the list of 200, but used here because they helped fill the dips of the curve of 100. They did not change the general outline. The average age is 18.93 years. The range is 10 to 30 years.

These curves easily fall into two classes, the emotional and the intellectual. The actors, poets, artists, pioneers and scientists—*i. e.*, the beginning of the scientific enthusiasm—represent one class which shows very clearly the emotional enthusiasm of adolescence.

The writers, inventors and professional men, although, perhaps, showing enthusiasm or emotion, win their success more in the realm of the intellect. The curves of the first class culminate at 18 to 20 years. The second between 30 and 40.

Of course the mature poet and scientist combine in a rare way emotion and intellect. Neither can be totally wanting in any successful life, yet these curves plainly show that the one predominates at certain times and the other at other times. The tendency seems to be for the emotion to ripen into the more intellectual phase. It seems to be a universal fact that intellect grows out of the emotion. Feeling, knowing, willing, is the order.



I can but feel that these lives teach a tremendous lesson. They show, to me at least, that a well balanced, healthy, well bred, fine grained nervous organism will very likely have deep and fluctuating interests or enthusiasms.

Instead of the regular repression now almost universally practiced toward what many may be pleased to call a craze or

fad, these should be encouraged. The boy or girl should be pushed into them, and the glow should be turned, if possible, to a white heat. There is no danger of a shallow, fluctuating nature as a result. The very opposite will be true. The well-poised man of many sides, who, although a specialist, sees the value and bearing of all other branches of knowledge on his own subject, cannot well result from anything else. To repress or discourage such tendencies limits our horizon at once. It never should be done.

See the boy Edison as he begins to read through the Detroit Free Library. Fifteen solid feet of the task completed with all the eagerness of a hound in the heat of the chase. It means a great brain. It is necessary to burn out these minor interests, touch the farthest point on this, that and every side. That gives the basis for magnificent productivities. They will be useful because the man has touched the bounds of life.- He commands the whole range. The same is true in the case of Joseph Henry or any of those cited above. They are all normal and healthy.

On the other hand a deep, silent, moody, lost condition of mind may prevail. Patrick Henry is a case in point. Some of the best minds have shown that dreamy, absent-minded quality that may mean that the boy or girl has awakened to a world of thought so vast that the mind wanders to find a basis for activity. They need encouragement. A rope should be given them that is tied to a most vital or self-sacrificing cause.

In a word, the flip, or blasé type is a bad sign. The brown study, or the deep and passionate interest type is promising. A round, full adolescence, with a rich religious experience, is the promise of a great life.

CHAPTER III.

CONCLUSIONS.

This study of adolescence has a two-fold bearing. It is important from the standpoint of psychology and has a very practical and valuable suggestion for pedagogy. It is not always easy to separate the psychological from the pedagogical, but this distinction will be made here for convenience.

PSYCHOLOGY.

I. The period of adolescence is the focal point of all psychology.¹

However we may look upon the origin of the human intellect, whether from an evolutionary standpoint or otherwise, it is easy to conceive that mind as such awoke to self-consciousness at the adolescent period of the first man. Adam and Eve were evidently in the adolescent period when they awoke to self-consciousness.

The spirit of rebellion against authority and the whole account of the later scene in the garden is typical adolescent psychology. If we take man as an evolution, we must think of him as coming to self-consciousness in this period of life when the pendulum swings farthest and there is the greatest ferment known in the individual history. In other words adolescence is the time of the soul's awakening both in the race and in the individual. From this first awakening, mind has pushed up to full rational self-consciousness and then directed its attention backward over the path of its development to pre-adolescent stages, including not only the psychology of childhood but of animal life down to the lowest traces of intelligent activities.

Adult psychology begins in the adolescent period and child psychology with its hereditary influences ends here.

To understand the human mind in later life the adolescence must be studied to find what stages of development have been passed through and in what stages the development has been

¹ President Hall, speaking of education, has said: "I think we may say, anthropologically, that it (puberty) is the period when education as a conscious, special, or public function began, and that has slowly developed as civilization has advanced, downward to the kindergarten and . . . upward toward an ever-increasing maturity of postgraduate work." *Forum*, May, 1894, p. 303. See also pp. 301-307.

arrested. It is, then, the period on which the study of the psychology of the individual should focus.

II. The characteristics of the psychology of adolescence are, for the most part, distinct. The length of the period is indefinite. It varies with each individual.

The most prominent feature of adolescence is the emotional life. The emotions are not confined to the years 10 to 25, but they are much farther beneath the surface in later life, and can be awakened to expression only by different or stronger stimuli. The emotional nature seems to mature rapidly and nearly reach its maximum before the intellectual or rational side, if they may be separated, has developed. This gives preponderance to the emotions and characterizes the period.

The moods normally are strongest and most fluctuating during adolescence. Despondency, spontaneous joy, love, hate, selfishness, generosity, sloth and energy of both mind and body, all very intense in degree, are strictly adolescent phenomena. They are normally outgrown unless development is arrested.

The growth of the ethical nature and the deep, broad, intellectual interests root in the emotional life of adolescence. If the instinct emotions are properly guided, they will pass over into permanent intellectual interests.

III. The mind, including all psychic life, grows by sections. The interest may center in prize-fights or foot-ball one year, and the next in æsthetic culture. The musical side may absorb the energy for a time to pass and be forgotten. The growth of the mind may be compared to a circle which enlarges by extending one sector at a time out to a new circumference.

These absorbing and diverse interests may be compared to separate sectors which push out to reach their final limit. The circumference or final intellectual horizon of adult life is determined, therefore, by the intensity of these interests and the extent to which they are pushed. Many interests enthusiastically cultivated mean a wide intellectual horizon.

IV. The discussion can hardly be laid aside without a suggestion as to the cause of these adolescent phenomena. The idea is often advanced that the development of the reproductory function on the physical side causes these mental phenomena. The present study suggests a different view.

It is true that the curves of most of these phenomena culminate within a year or two of the time of puberty. But some of the strongest adolescent emotions are reported by many individuals as occurring years before or years after puberty.¹

¹ After writing the above another case was reported by a young man possessing a strong, active, but very calm and philosophic mind, who

The strongest adolescent symptoms are found in the most highly developed organisms which are farthest removed from the physical or brute nature, and where reproductory power is often very weak.

Dr. Scott¹ showed the relation between sex and art and took the position that art is an irradiation of sex. It might well be shown that there is a similar relation between sex and other things. There are many irradiations of sex. School and college life is one. Sex does not cause art any more than sex causes intellectual ability, but both draw their vitality from a common fountain, and when one draws more than its share the other suffers.

Adolescent phenomena sometimes appear with all their intensity in old age. This is not necessarily a recurrence or a retraversing of the neural paths or channels cut in adolescence, for one person, who has been carefully studied, has passed through an entirely new set of emotions in his senile adolescence which were unknown to him when a young man. In this particular case the sex element was very strong in youth, and the mental adolescence not marked by great fluctuations. After 70 years of age a very intense mental adolescence developed with vivid religious experiences unknown in earlier life.

The adolescent interests seem to depend on the size and quality of the brain in direct ratio, and are inversely proportional to the growth and vitality centering in the reproductive organs. That is, precocious and abnormal use of the reproductive function destroys mental adolescence, with its many sided interests, faster than anything else.

It is true that depression and a desire for solitude, and possibly other similar phenomena, may accompany such degenerate use of this function, but they are of a very different kind from the normal adolescent love of solitude, and passing moods of depression. The final reason for my inability to believe that sex is the cause, is the fact that eunuchs have the same adolescent symptoms as others.²

had a religious storm and stress period between 8 and 10 years of age, and about the same time had these spells of elation and depression. He was not precocious physically. He is very stout, with dark hair and eyes, with phlegmatic tendency.

¹ Colin A. Scott, "Sex and Art," *American Journal of Psychology*, 1896.

² The following letter is from a professor in a well-known college in New England, who has spent years in the East and has made a special study of the eunuch. The Nubian eunuch is as nearly desexed as possible, and that in infancy.

"There is no question that castration at an early age does in various ways modify physical development, though I do not think it modifies it so much as is commonly supposed. I have seen Nubians, eunuchs,

I have also found several cases of phimosis, which arrested all growth of the organs, but did not apparently affect in the least the mental adolescence. The effect of castration on animals, arrests development of organs of combat and makes other changes. We cannot argue here from animals to man. Man learned long ago to rely on brain more than brawn. Castration or arrested development does not make changes in man which are comparable to the changes made in animals.

The physical change of features at this time suggests another reason for these adolescent phenomena. They indicate a change of hereditary influences. From the moment that the spermatozoon unites with the ovum there is a conflict of hereditary influences between the two, that the life contained in each may assert and express itself. Common observation shows that this conflict of these microscopic elements, even in the closed apartment, with all nervous connections to the rest of the body as yet undeveloped, is so violent as to cause a disturbance of the sympathetic and vaso-motor systems.¹

The fact that the type not only of features but also of family characteristics may change at adolescence, shows that these forces are still prominent and are struggling now in final conflict for the mastery and the opportunity of self-expression. This war of prepotencies, which causes or results in changed external features, is sufficient ground for the occasion of the adolescent mental phenomena. It is not the cause. It is also the occasion of the later development of the sex organs peculiar to the

and Nubians, non-eunuchs, together, and in every physical feature they resembled each other. The difference most likely to be observed was in the voice. Castration does produce an immense effect, though an indirect one, upon the character. It is not the operation in itself, but its effects upon the mind. The mind broods over the fact that the body is reproductively impotent and is filled with morbid resentment and jealousy. No other physical deformity can so far distort and devilize the character. As far as I can judge, sex feelings exist unmodified by absence of the sexual organs. The eunuch differs from the man, not in the absence of sexual passion, but only in the fact that he cannot fully gratify it. As far as he can approach a gratification of it, he does so. Often, maddened by sense of impotence, he wreaks vengeance on the irresponsible object of which he is enamored.

The eunuchs have all the adolescent phenomena. I have watched, for example, boy-eunuchs of ten or eleven years, possibly younger. Early conscious as they are of their desexed condition, there was nothing apparent in their moods or pleasures different from other children of their race. They took the same delight in a perfume or a flower, or a pretty baby, as any other boy of their race would have done. The little eunuch is more inclined to solitude than almost any Western child, but perhaps no more than his compatriots. As to rebelling against authority, I have more than once seen a diminutive eunuch do that."

¹ This would indicate that the protoplasmic conditions of interaction of parts is not entirely lost in the differentiated organism. The protoplasmic communication is intermolecular.

individual which will very likely be characteristic of the parent or family which he resembles in mental and physical characteristics. The cause must lie much farther back in the, as yet, unknown forces of life itself. When we know what life is, and where differentiations begin, we may speak of the cause of adolescent phenomena.

PEDAGOGY.

I. *Sex Hygiene.* A woman reports three daughters. The oldest had her first sickness one month before 15. The next, 19 months younger, learning this phenomenon from her sister, followed in three months. The other sister, who was 11.5 years of age, followed in six months. A girl, 11 years old, very small and not precocious, was told what to expect, her mother not thinking it would occur for years. In a short time the daughter came to puberty. Another girl, verified by her mother, reports the power to control the menses. She can put it off a week at will. The question arises as to the possibility of precipitating the menses by suggestion. It is probable.

Pedagogy demands, then, that we do not wait till near the normal time, lest the instruction direct the attention, increase the circulation, and cause unfortunate precipitation. On the other hand several cases are reported where girls knew nothing of it, were ashamed to tell, bathed in cold water, with the result that one was thrown into spasms, causing insanity, that was only outgrown after the reproductive period. Another was rendered insane in a similar way. A third went into spasms which resulted in death. Other similar cases are reported. The information could be given in many different ways that would not demand any alarming predicament for the parent whose false modesty is so criminally superior to his or her sense. It is cruel and barbarous to neglect this instruction.¹

A woman said in substance: When in the High School it was terrible for me, when unwell, to ascend the long flights of stairs to chapel. I asked the principal to excuse me, sometimes. He asked, why? Of course I dared not tell him, so went, but often nearly fainted from the terrible pain caused by the ascent. She explained that she had a broad pelvis, and the bowels pressed down on the uterus, especially in ascending stairs.

A girl reports suffering and fainting from a similar cause.

Teachers should heed this warning. It would be worth more to our girls if some of the ornaments of the school building were omitted and an elevator provided. It is a fact not suffi-

¹ See E. H. Clarke, "Sex in Education." See also Antoinette Brown Blackwell, "Sexes throughout Nature," pp. 138-148 and p. 158. Also *Westminster Review*, 142; 315-318. Excellent on what girls ought to know.

ciently recognized that a girl who is well shaped and developed for motherhood, finds it very difficult to ascend stairs when unwell. It is not only wrong, but dangerous to physical and mental health to oblige them to do it.

Women writers have done harm by saying that a woman can do all that a man can do. A few of a masculine type may be able to, others would endanger their physical and mental health if they attempted it.

The hygienic treatment of boys at adolescence has been almost criminally neglected. It may be quite as injurious to a boy as to a girl to arrive at puberty with no knowledge of normal, healthy symptoms. The simple matter of night emissions, which are likely to happen any time after puberty, though perfectly harmless in themselves generally, cause fears and lead to the very worst evils, such as despondency, imaginary disease, suicide, or a plunge into the worst depths of social life.

Knowing that the young men write confidential letters about themselves to medical companies, I wrote to several such companies asking to read a few of those letters from the young people. They all replied that the letters received never under any circumstances passed out of their hands. Later I found two large letter brokers in one city, who had bought from medical companies, letters which had been written by young people, under a guarantee of confidential treatment, or by older people suffering some private ill, imaginary or otherwise. These letters are sold by the thousand, collected by brokers who rent or sell them to parties for copying purposes. One broker gave me his amount of letters in stock. He has 705,000 "medical" letters referred to above, 1,800,000 "agents" letters, 275,000 "matrimonial" letters, 300,000 to 400,000 "novelty" letters, making a total of over 3,000,000 letters in stock.

I had in my possession recently a thousand letters, mostly written by young people, and sold by these "doctors" or medical companies. It presents to view a sad feature of our social life. The people who wrote the letters were all duped by these quacks, who advertise to cure what they describe in their books as symptoms of syphilis and other terrible diseases, but which are mostly only symptoms of good health. Their prices of treatment are outrageous. One boy had paid nearly a thousand dollars for treatment. He gives his symptoms carefully and they are perfectly normal. The common ill is night emissions.

Some of these letters were written by teachers, ministers, superintendents of schools, and women, who wanted confidential advice. The signatures and addresses were all left on the letters.

It is a matter that ought to receive State and national legis-

lation. But above all our young people ought to be instructed about sex matters.

One boy had run away from a good home because he had been led to believe that he had an incurable disease. His case was perfectly normal. He had read their fiendish literature, was frightened, and dared not talk with his father about sex matters. Another boy said: "I have occasional night emissions. I am poor, but would pay \$500 rather than drift on to the destiny that awaits me if I continue in this way."

Another: "Enclosed \$12. One night emission last month. Have had three packages of medicine. Think one more will cure me." (He had paid \$36 before.) The letters are variations of these with details not to be given here. They show that a dreadful burden of anxiety rests on the young men who are constantly plunged deeper and deeper into despair by these medical companies and "doctors" who advertise to cure such troubles. Their literature can be had by answering advertisements in local papers. This is not a light matter. It strikes at the very foundation of our moral life. It deals with the reproductory part of our natures and must have a deep hereditary influence. It is a natural result of the foolish, false modesty shown by the American people regarding all sex instruction. Every boy should be taught the simple physiological facts before his life is forever blighted by this curse.

II. *Disease and Moods.* The power of recovery from disease at this period is a tremendous fact. The change of nature brought about by change of ancestral influences often causes an entire renovation of the physical system, and diseases which existed at least in symptoms may be entirely outgrown.

Despondency at this period demands sympathetic treatment. It is entirely wrong that so many of our young people are meditating suicide. From their own statement it is because they do not receive recognition and sympathy. They have sprung full-armed into manhood and womanhood in their own feelings, while in dress and treatment they are often forced to remain children. The boy or girl at puberty demands all the recognition that any adult deserves and a greater wealth of sympathy. The wise teacher will not disregard the feelings of adolescents.

It is an open question whether the boy or girl should be urged to work when under the spell of either laziness or great activity. The forces are being accumulated, anabolism goes on when one feels dull, while energy is expended and katabolism is rapid when one feels energetic and must have activity. Each individual must be studied, fatigue noticed and the work meted out in a way to do the least harm.

We must consider that habits of work will be formed and

an endeavor to sustain periods of labor will necessitate, possibly, a levelling of these positive and negative moods.

III. *Ideals.* The universal possession of ideals affords an excellent opportunity for the educator. There are different stages. The period is one when command should give place to the presentation of an ideal, and an ideal adapted to the age and interest of the youth. In early adolescence there needs to be something heroic or self-sacrificing in the ideal.

IV. *Artistic Impulses.* The pedagogic question arises regarding the impulse to study art or music. It should be treated sympathetically and encouraged, but the most unfortunate thing that could happen would be to specialize in these branches. If great talent in music exist it will be apparent before this period, and artistic ability of a high order will show itself as such by the time of puberty. Real talent for either art or music will come to the front anyway. If it does not exist, it would be most unfortunate to launch the pupil into an artistic, musical or literary career. When talent does exist it should be kept back and culture should be broadened and deepened lest that side of the nature develop at the expense of everything else, and in order that the specialty may root ultimately in a rich and cultured nature. Special high schools, therefore, would be pedagogical monstrosities.

V. *Natural Science.* The great love of nature, compared with the distaste for science existing in the same individuals, is a blow at the present methods of killing scientific interests by the text-book method of instruction. 640 were lovers of some form of nature, while only 290 of the same individuals liked any one science. This love of nature should be utilized to develop the scientific spirit in the pupil.

VI. *Interests.* The enthusiastic interests of adolescence demand a pedagogical suggestion. The high blood pressure, the mental and physical ferment, and the potentialities or unconscious forces struggling for conscious realization, demand excitement or violent expenditure of energy at times.

"Excitement young men must have, which, like a breeze swelling new sails, brings the new nerve tissue and faculties into activity without which they atrophy. If there is no enthusiasm, deep and strong interests in intellectual and moral fields, passion is stronger. The two are physiological or kinetic equivalents."¹

A healthy, normal boy must do something. Athletic, scientific, literary, or artistic interests, or plenty of hard work, is a necessity to keep the physical and mental life pure, healthy and growing.

¹ President Hall, *Forum*, December, 1893: pp. 439, 440.

The enthusiasms of college life develop the college student and make him superior to one who has had no enthusiastic interests during his adolescence. It is especially noticeable in boys entering college from the large fitting schools when compared with boys from schools where there has been little except the text-book work necessary for preparation. The wildest celebrations of victories may do the boys as much good as a long period of quiet study. Of course this enthusiasm must spend itself in moral ways as a laudable outburst of *l'esprit du corps*, or it may be as injurious as it otherwise would be beneficial. If these outlets of energy are denied, immoral gratification of desire will very likely result. The aim of education at this time should be, therefore, to make the most of these interests which are harmless in themselves and not likely to become permanent, to prepare the way for a greater interest in the higher religious and moral sphere and the intellectual interests which are to become permanent.

— The pedagogy of adolescence may be summed up in one sentence. *Inspire enthusiastic activity.* Hopeless is the young man who has no interest. Even a low interest pushed to the extreme will give place to a higher. The best in human nature can be brought out by making the most of these stages of development, each in its turn.

VII. *Facial Expression.* The features and countenance are the best indices of character and disposition. If these change radically we may look for a change in character, which will necessitate a change in treatment or injury will result. Just here may be the taproot of so many conflicts, runaways, and sullen, ruined, desperate lives. Many a life tragedy starts with the misunderstanding of the boy or girl at adolescence.

VIII. *Religion.* It is the natural time for the growth of the religious emotions, which are the only basis of a healthy, moral nature. Aside from all relations to a future life, the religious emotions should be regarded as the most valuable of all for immediate results in character. The new birth is no myth, but a fact, admitted by science as well as the church. Religion does not mean subscription to any particular creed. This mistake has been made. The Christian Endeavor movement is a great witness to the fact that religion without particular denominational creeds meets the needs of young people. If the religious emotions are thus cultivated until they are established, the particular forms will adjust themselves with little harm to the individual.

The worst thing that can happen is early forcing of the religious emotion and the subsequent relapse. The religious feeling often comes in waves of increasing intensity. The first may appear in very early childhood, but they reach their maximum

about 16 with the average person. At least 16 is about the average age of conversion for the 600 who answered this question. Each religious wave should be treated sympathetically, but public expression of any particular belief should not be urged before 15 to 20. We should hardly advise marriage when young persons speak for the first time of admiration for each other. It is too sacred a relation. The religious life is far more fundamental in character and more sacred in its relation. Early acceptance of God or Jesus will be urged with extreme discretion by all wise, religious teachers, until the religious nature has been cultivated by a general development of the religious emotions. A study of the cases given under the love of nature will suggest the best method of development. After the nature stage, present the ideal. Hold up noble, religious lives, and let the suggestion leaven the whole nature.

Religion must not be neglected. The welfare of the family and the State depend upon it as much as the interests of the individual soul. Doubts and intellectual questions should all be put off till a later period. The emotional side of religion should dominate childhood and adolescence. It is not the age when fear appeals to one. Adolescents will sacrifice and perform duty for the Master as at no other time in life. Instruction should take the form of an appeal to free, spontaneous loyalty to the King, and Jesus should be presented as the ideal, heroic God-man. His self-sacrifice and self-denial, his suffering and passion may be taught with the assurance that they will appeal most strongly to the soul-life of the adolescent.

Details of school organization and management, and curricula best suited to adolescents naturally belong to this study. The writer has made such a study and may embody the results in another paper.

Philosophical Summary

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DIFFERENCE BETWEEN CHILDREN AND GROWN UP PEOPLE, FROM THE CHILD'S POINT OF VIEW.

[ABRIDGED.]

By MARY LOUCH, Ladies College, Cheltenham, England.

O wad some power the giftie giv'e us
To see oursel's as others see us!

Such a "giftie" I now present to you. I have had in all some 530 of them showered upon me, contributed by boys and girls of various social classes and of ages varying from 6 to 16. Of these about one-sixth were written by boys; and chiefly by children of 9, 10, 11 and 12 years of age. So far, I have not had time to classify accurately the remarks contained in them nor to draw up tables of statistics; I have used the papers merely for suggestive purposes, and can only offer the roughest outline of the difference between grown up people and children as sketched by juvenile hands.

PHYSICAL DIFFERENCES.

One of the most obvious differences is naturally that of physique.

(a.) First there is a difference in size: "the great difference between men and boys is the size and age;" "Grown up people are taller" — but elder children remark that this is not always the case, for some children are taller than their parents "and have better figures;" three say "A man is generally taller than a boy, except when he is deformed;" another, "men are larger and a lot older than boys;" another, "some children are bigger in length but not in breadth." "Ladies and gentlemen have larger hands, eyes and ears." "Men's voices are harsher than boys." "Grown up people have their wisdom teeth." (This is remarked by several.) A girl of 10 begins: "Old people have wisdom teeth, they were born before young people and are older in years and in ways."

"Grown up people have stopped growing and I suppose they have sobered down;" says another, "because they don't seem to want romping and noise or even to have such large appetites as children have, and they never do seem to understand that you must make a noise to let your spirits off sometimes, at least governess don't."

One boy writes very definitely concerning size differences: "I am a child myself, and my father and mother my eldest sister and brother are grown up persons; my other brothers are children. Now I think the greatest difference between us is this: My father, mother, eldest sister and brother are so much bigger people than us children. I mean by bigger so much stronger than us. For instance take taller first. I am only 4 feet 2 inches while father is 5 feet 10 inches and if I put his jacket on it would seem more than a big overcoat on me. Then as to strength, I could not carry our coal scuttle without being very weary, whereas I have seen father carrying it all over the house and turn a stiff gas on afterwards that I could not move. But for all that I can beat him at foot-ball. Then another difference between us is that grown up people can write ever so many letters in no time, fasten them

up, and direct them and send me off to the pillar box to post them before I know where I am. Now there must be an enormous difference between us there, for I had the other day to write a card to Rush & Warwick saying I had found one word spelt wrong in their Time Table. I had but 6 or 7 words to write in all but doing that and directing it, squaring my elbows and writing first with one knib and then with another did take such a time. I cannot think how grown up people can be so unwise as to write letters at all."

(b.) We come next to strength. "There is little or no difference," says one, "in the shape and make of grown up people and children, except the children are not so strong." "Grown up people," says another, "are stronger both manually and intellectually and so they are able to do more work with their brains as well as with their hands." This increase in strength is accounted for in various ways: "As you grow older you get stronger, that is because your bones grow and make one bone, as in the arm." The subject of bones appears to be a favorite one. "Some people who are grown up often break their bones because their bones are so hard." Another says: "A man is stronger because his bones are brittle." "Boys can do gymnastics but men cannot, owing to the small bones at the end of their back having become joined together, except in the case of clowns who do jumping and tumbling from their childhood." (A little boy of seven says, pathetically, "Big Popel are stronger than small popel and when they slap them it hurts more than little popel.")

(c.) With regard to agility. "Boys can run a lot faster than men;" but, says another, "grown up people can walk quicker they have longer legs and arms, they are more muscular and can lift heavy weights." Another child with different experience says: "Grown up people cannot work so hard nor walk up and down stairs so many times a day because it tires them out." One little girl says: "Grown up people can read big books like Tennyson, write and swim better but they cannot run nor whistle nor skip half as well as children." Though grown up people may be deficient in respect of whistling and skipping, yet it is conceded that they can make puddings, iron, wash, make frocks and cloaks, which children cannot do.

(d.) We come next to appearance. The different fashions of wearing the hair is the distinction most frequently noticed. Grown up people, if women, have long hair, children have short hair; "When a grown up person has long hair she does it up on her head with hair pins and the child does it up with ribbons." "Men's hair goes gray but boys do not." "Grown up people have gray hair and wrinkles," the latter being invariably accounted for by the fact that grown up people have had so many troubles connected chiefly with children.

(e.) Many children comment on their own restlessness and love of activity. "Children do not want to sit still but grown up people want to sit still," "and they are never tired of play and never ready to go to bed, whereas older people are glad to get their work done and get to bed as soon as they can;" and another says: "Children like romping games and racing about, they generally like to do things that grown up people don't like them to do, they like going to bed late and having bolster fights."

(f.) With regard to health of grown up people and children, most give it as their opinion that the latter are healthier than the former. One child says that children are more delicate than grown people and accounts for it as follows: "Grown up people are much healthier than children because in olden times, the children used to be fed on much plainer food than children are now."

(g.) The relative quantity of food eaten seems to be of special in-

terest to the boys. Very few girls speak of food at all. Many appear to realize that children need much food for growth, while men need much food for their hard work. Boys like cake and sweet things and drink lemonade and soda water, but men don't care for sweets and sometimes drink wine and spirits and get drunk.

MENTAL AND MORAL DIFFERENCES.

"Some men have more brains than boys have, and they are not so stupid as boys are." Learning lessons is said to be much easier for grown up people, yet all are not of this opinion. A child of 8 says: "If children are taught anything, they seem to take it into their minds, but if a person tries to teach an old person what he never has known, the teacher might stay a very long time before he could grasp hold of it." "Children jump at an idea," says one, and another says: "children have simpler ideas; children speak their first thoughts and think it does not matter whether they are right or wrong."

That grown up people have more sense is the unanimous opinion, so far as expressed, and generally for one of three reasons: "they have been longer in the world," "they have been out in the world," or "they have read more books." Children seem quite conscious of the smallness of their store of information. One little girl says: "Children can't tell a story, and I could n't tell all about the Israelites and Gibeonites as papa could." That children are generally happier seems a common opinion. A little girl, who was ill, said the other day to her mother: "Mummy, I feel quite tired and miserable like you, you know, and little children ought not to feel that way, only big ladies." One child would not wish to be grown up because "grown up people have a lot more to think of both in thoughts and habits than children." "Children do not have sad things as elders do to worry and upset them, another thing is that children play with the pretty things they see and elders have to work and buy things that children get hold of and break in their amusement."

A child's cares are chiefly connected with school and lessons. The cares of grown ups appear to center in the mother and to be connected with husband, children and household expenses. After describing all that mothers of a family have to do, such as sitting up at night, a girl of 11 says: "Women have to look for their husbands while we have to sit down and wait." Again, "Grown up people have a great many cares, and one of these cares should be to *make children happy and keep them from care.*" "Women sometimes have to stay at home and clean it while the children go and have picnics in the wood. They (the women) have to buy their clothes, while the girls are playing and tearing theirs." "A mother's work is to cook the dinner, scrub and work and do all sorts of things, when a child has got none of that to do. A child has got her own business, and a woman has got more than that." "I think that all parents, in fact everybody older than ourselves should be pitied, because they nearly always have a lot of trouble to keep them awake at night."

That the example of grown up people is readily followed by children, and should therefore be a good example, is expressed by many. "Grown up people ought to set an example to children." "If our parents do anything, children try to copy them, and it is best for the parents not to do wrong before the children, as they would go and copy it." "Children are generally very quick in doing things that is not right, what they see grown persons do, and they are not always quick in doing what is right."

Children make very few remarks about language. Grown up people use longer and harder words that the children have not learned to un-

derstand, and some are uncomfortably conscious that their parents have had less education than they themselves have.

Children say that they are more timid than grown up people, but give very few specific instances. One trait of childhood is brought out, namely, the fact that children are afraid of noises they don't understand, and that they will stand fearlessly in the most dangerous places.

As to temper, children criticise their elders freely. In their endeavors to train children to be polite they are very likely to snub them, seeming to forget that they themselves were once children. Grown up people are not so hasty as children, but their temper, when roused, is more serious. They are more patient than children, who are always longing for Christmas. Sulking is considered very naughty, and is mentioned as a failing common to many children. Little children are very affectionate, and grown up people are often cold and keep them at a distance.

The younger children say very little about the future, but some of the older ones look forward to growing up, the boys showing more realization than the girls. Boys look forward to doing as they please and making their way in the world. An elder girl truly says: "A child never thinks of what is going to happen, the only thing that concerns it is what is going on at the present time."

MANNERS AND MORALS GENERALLY.

"The difference is grown up people have more manners, children have got to be told to behave; grown up people are more gentle, children are very rough and careless." A boy of 9 says: "Big people shake hands nicely, and say 'How do you do?' Children don't say anything polite." A little girl of 8, writing of the manners of ladies, says: "They go in trains and lady look out of train window, and lady wear spectacles, and lady never whistle." "Grown up people are more polite, but usually so stiff and affected, children generally are naughty and not stiff." "Grown up people are always anxious that their children should behave well and talk nicely; children sometimes do not care how they behave and talk." "Boys have to be taught their manners." "Some boys don't know their manners, that is because their mothers don't bring them up properly and so they cannot keep a place of work." "If not taught properly, children will say silly and rude things at the dinner table."

Cleanliness is said to be next to godliness, and children apparently consider cleanliness a cardinal virtue. "Sometimes when children are sent to school with nice, clean clothes and their boots cleaned nicely, they play about and get their boots muddy and their clothes get dirty and they go to school very dirty." Again: "Some children obey their parents and some disobey and so they get whipped. Some children go to school with clean clothes on and some go with dirty clothes on. The boys and girls who go to school with dirty clothes on is the ones that disobey their parents."

The subject of obedience is not as freely discussed as one might expect. Children appear to realize the practical utility of it at least and to trouble about little else. A child says: "A child is supposed to do what they are told; generally it is the lazy people that do not do what they are told." The reason for obedience is thus stated by one: "We ought to obey people older than ourselves, because when we get older we shall want everybody to obey us—that's why we ought to behave ourselves so that when the little ones disbehave we can correct them." Others dimly realize that grown up people have to be obedient too. "Children have to be obedient. Grown up persons do not always be

obedient because they have learned in their childhood that they should be obedient to those who have the care of them." Another says: "Some men lose their place of work through not doing as his master tells him and sometimes they don't get any character through not doing as he was told."

"If a child has done anything wrong," says one, "the grown up person ought to correct it, but if a grown up person has done anything wrong a child has no business to tell it her." A kind little girl of 9 says: "When a grown up person has done anything wrong, a little child ought not to take any notice." Another recognizes the difference between the arbitrary punishments of childhood and the natural punishments of adult life. "If a child tells a fib, he is whipped or put to bed or put in the corner, if a grown up person does the same, his friends do not trust him as they did before and then his punishment is not exactly acted towards him but only thought."

To the faults of children the juvenile writers are somewhat more lenient. "Boys are cruel to horses." "Boys are too lazy to clean their boots, to go to Church or Chapel." "Some boys are so common and lazy that they are not fit for anything but play at bad behavior." "Some boys think it fun to be dirty or let their mothers do all the work." "Some boys like fun with old women and throw snowballs at them." "Children are selfish," but says another: "Some children who have anything given to them will part it between their brothers and sisters." "Children often quarrel about nothing and they have to get some elder person or nurse to settle the matter for them and if the nurse happens to go out of the room again, they begin again and it generally ends up in a fight and the younger of the two is generally crying." With regard to sympathy, opinions differ. One says: "Children take pity on any person or thing suffering, much quicker than their elders." Another girl, writing her views in the form of a letter, says: "Children have their parents to go to when in trouble, but their parents have to nurse their own grief. Dear Edith, why don't people tell their children their troubles?" "When a child is in great trouble, it seldom goes to another child for sympathy, it generally goes to some one who is grown up, as an older person is better able to advise the child what to do and how to get rid of the trouble." Another says: "Children often treat you with more kindness than a grown up person."

One weakness of middle life does not escape the sharp eye of childhood. "When people are grown up, they try to make themselves much younger than what they are and do not say very much about their birthdays, but children like to say how old they are and when their next birthday is."

Two children say: "Grown up people are responsible for their actions, especially for saying and doing unkind things, while children do not know when they are doing unkind things." "Children hate being laughed at," says one, "and grown up people do not mind; children are very sensitive and grown up people do not think so and say all sorts of things that children do not like."

Children are painfully familiar with the vices of adults; men drink, swear, gamble, steal, fight, insult gentlemen, beat wives and children, are spiteful to horses, dogs, cats, etc., starve children and are sometimes murderers.

HABITS AND OCCUPATIONS.

We may roughly class the rest of the children's remarks under the head of habits and occupations. That children go to school and grown up people go to work is the difference noticed more frequently than

any other; about two-thirds of the writers comment on it. "Grown up people like to work" or "are more ready to work" whilst "children do not like to work" or "shirk work" or "might do more than they do," nevertheless, "some children try to help one another." One child says: "Some men are too lazy to work and his wife has nothing to give her children." Another, "Grown up people have to work, some of them are lazy and do not like to do anything and stop at home doing nothing."

Children have no mercy for grown up people who do not work, but they are doubtful about the necessity of work for themselves. "Children require play but older persons do not think of such a thing but are more adapted to work." Several say that children's work is to "go on errands," and another, "children ought to do as much as they can to help their parents that is the children's duty." It is remarkable that in these papers not one child speaks of its play as work. They distinguish very clearly between work and play. A little girl of 4 who was asked her opinion on this subject of differences said: "Little children only play and grown up people put out teas and sugars and take away the breakfast things and make gingerbreads." Another says: "Children can go out into the fields and pick flowers and in the hay fields, but grown up people have to wait till they have done their work."

As might be expected, children are very prolific in ideas about *school*. They generally regard school as a necessary evil, as a bitter pill which will do them good eventually. "Children do not care much for school, but older ones know that it is good for them to learn." "Boys don't like to go to school because they have to do many lessons and it often brings illness on them and then they have to stop at home for a long while." Another writes: "A great many boys think that schools are of no use and would not go to school." "Sometimes the boys and girls are sent to school and they do not go." One child connects all the trouble of early life with school. "Some people have the responsibility of a house on their shoulders, while children, who are generally at school all day, leave all their troubles there." Teachers might be rather surprised to hear what children themselves expect to gain by going to school. A boy traces the growth of a man from infancy and says: "A few years afterwards it is sent to school to read and write, to sum and fight." School is generally regarded as the means (disagreeable at best) of getting "a character" and a situation afterwards. "A great many boys think that schools are no good to them but it is wrong because the schools are built for their own profit. If it were not for the schools they would not be able to get situations after they had grown up, so it is wrong to say schools are of no use." The exchange of school for work is a common theme, and the immorality of leaving school while in the 5th standard is frequently commented upon. "When boys are at school they wish they had left but when they are at work they wish they were back at school."

We come next to "*toys and play*." "Grown up people like to keep indoors—children like to be out of doors." "Children like as well a good cold winter so they can go snowballing but some old people dread the coming of winter." Little is said about dolls. "Children, especially girls, amuse themselves with a rag doll for hours and hours together, but older people like to read a good book." The amusements of grown up people after children are sent to bed are frequently spoken of with envy—the whole subject of going to bed is generally a sore one. One child begins with this difference: "Grown up people go to a lot of amusements and let the little ones go to bed while they go and enjoy themselves, because it is not fit for children."

Speaking generally, a very little one remarks: "Big people like things that little people don't care for, we little people can't understand how the big people like it if we don't."

GENERAL ESTIMATE.

"People should always speak properly of each other and children should always speak respectably of their parents," is an ethical suggestion which has perhaps not always been carried into practice in the above, yet, on the whole, they may be said to hold the opinion expressed by a girl of 10 that "grown up people are in a higher class," and that "grown up people are of much more importance than children;" also, "it seems to a child as if he never can become as old and as wise as the older people he sees about him." Some there are who discuss the whole question very summarily, as does the 12-year-old writer of the following—I append the whole of his paper: "On the subject of grown ups I have certainly not much to say. In some parts of life they are a great nuisance such as school, etc. I think it would be much better to remain always boys. I don't know what sort of a grown up I should like to be. They do not form any part of my studies during the term except to see them. Finis." One who sees the humorous side of life states, generally: "Children are very amusing but so are grown up people in different ways." Another regrets that she must be grown up some day: "I do not want to be grown up much but of course that cannot be helped." An 8-year-old says: "There is a great difference in houses where there are children and where there are not. A house seems more pleasant and happy where there are children than where there are only grown up people."

These 500 papers are a rich mine for the research student. We cannot pretend that any scientific truths can be arrived at by examining them, but I feel that as a means for suggesting research, their value is very great. If they tend to nothing more than the fuller realization that there's indeed "a chiel amang 'us' takin' notes," it will not have failed of its purpose. Truly, as a little girl of 12 says, "In God's sight we are all children, both old and young ones."

A NEW ASPECT OF CHILD STUDY.

HARRIET A. MARSH, Detroit.

It is often said that the constantly increasing complexity of civilization necessarily gives rise to a corresponding complexity in its demands upon education, but it may be gravely doubted whether these needs have not always existed, in certain measure, but are now being rendered more apparent by the gradual decadence of certain institutions and the slowly growing intelligence of the masses. However this may be, the average parent has begun to show, within the last decade, a very distinct consciousness of two great needs—first, the necessity of a more rounded development for the child, a development which shall recognize to the full the requirements of his spiritual and physical natures and the almost total dependence of one upon the other, and, second, the parent's utter inability to cope, alone, with this great problem, and his consequent demand for assistance.

It is perhaps unnecessary to trace this first great need through the many causes which have entered into and aided in its growth, or to inquire the extent of its power at a time when simpler modes of living and the comparative absence of emigration rendered home life more homogeneous and less distracting; it is sufficient for our purpose that we recognize its existence, from the time when the Puritan conscience, the American climate, and the ever increasing exactions of civilization entered into combination against the human race—its subsequent history is ours; it has grown with our growth, unnoticed and unsuspected, until its hydra-headed form now blocks every road to progress, and fills the more thoughtful with uneasiness and alarm.

The second need is but an inevitable attendant upon the first. Intelligent and conscientious parents are beginning to feel the necessity of more co-operative assistance in this the primary work of the human family; and to acknowledge that early marriages, insufficient education, multiplicity of cares, and lack of time for self improvement render them incompetent to fulfill this trust unaided and to demand assistance outside the home circle. That this demand should fall, with all its weight of responsibility, upon the teacher is also inevitable, not because she is always so well fitted for the task, but because she is generally better fitted than the average parent, and also because her peculiar relation to and knowledge of the child give her a truer insight into character and requirement than can be gained under any other circumstances.

Granted that these statements are true, and the economics of education may demand a close co-operation between parent and teacher, as the next and most progressive step to be taken in the near future; community of interest has always woven the strongest bonds known to the human race, and outside of the immediate family relations, what closer tie can be found than that which exists or should exist between mother and teacher? Both are engaged in one common task—the training of an immortal soul for eternity; how can either work most intelligently without a knowledge of the other's aims and plans?

Think of the mistakes, the misunderstandings, the anxieties, the tears which might be avoided under this suggested co-operation, and

then tell me whether the public school can reach its highest degree of usefulness until mother and teacher meet on common ground, as members of the same family, to consult together concerning their common charge; until the mother is a frequent and welcome visitor in every school-room and understands, as well as circumstances permit, the aim and object of the teacher's work. Such a relationship would do more to improve and elevate the home, more to shape the rising generation, and more to fix the teacher's true position in society than can well be imagined; and all might be brought about so simply and naturally, the benefit would be mutual and the teacher's sphere of helpfulness bounded only by the limitations of her own heart and brain.

Under a strong belief in these principles, the following experiment has been made:

The Hancock School, Detroit, Michigan, numbers about six hundred pupils, four-fifths of whom are of American ancestry, the remaining fraction claiming parentage almost equally from the English, Scotch, German, Irish, and Canadian; few are very poor, and few, if any, very rich; the majority being honest, industrious, hard working people who are buying their own homes and making every sacrifice to secure educational advantages for their children. People of good average intelligence, with a keen interest in the religious and political questions of the day; a fair representation of America's most useful and influential citizens—the middle class.

At the time our story opens, it had been necessary to make some change in the corps of teachers at the Hancock School, and, in spite of all effort on the part of the Board, advantage was taken of the then-prevailing political issues, and a very bitter party spirit was infused into the questions at stake. The principal was new to the school and the locality; so were two-thirds of the teachers; what could bring harmony, and quell the spirit which threatened so much mischief?

This question received no definite solution until Dr. Hall's Syllabi suggested the feasibility of a Mothers' Meeting. Preparations were soon made, a circular announcing the date and object of the gathering was sent out, and twenty-four mothers met me on the second Thursday in October, 1894, to inaugurate what has since proven one of the most helpful and inspiring movements ever undertaken in connection with our school work.

The address was in substance as follows:

My dear Friends,—We have come here to teach your school, the primary object of which is to make, or to help make, honest, healthy, useful men and women; we cannot do this without your assistance, and, in our work, shall doubtless make many mistakes. If you will tell us of these frankly, we will gladly correct them whenever it is possible to do so; when it is not, we will give our reasons for refusing. Will you not join with us as sisters of one family, working for one common good—the welfare of your children and ours?

A set of simple questions from the syllabus on "Dolls" was distributed for study during the month, this subject being chosen as one with which all parents are moderately familiar and also because its strangeness might attract the attention of others who had not attended.

In November, forty mothers came, all of whom seemed interested, but afraid to talk; and many little devices, such as calling upon certain members for their experiences, asking the opinions of others, and showing the gratitude I felt for the answers given, were resorted to. The fusillade of questions was kept up in spite of the most discouraging, monosyllabic answers. Every one was drawn into the discussion, and, after a time, we were rewarded by a few spontaneous remarks from the more courageous and daring. Several old ladies gave their hus-

bands' experiences, and a small delegation of the timid remained behind to express opinions it could not voice in the general assembly. The results were most interesting. From what could be gathered, it seemed that several fathers had taken an active part in formulating some of the many ideas expressed, a careful study of which gave three distinct lines of thought, as follows:

- 1st. The absolute need of all children (especially boys) for pets.
- 2nd. That boys would make better fathers and husbands if encouraged to play with dolls.
- 3rd. The absolute barrenness of imagination in children of purely American ancestry, as compared with those of English, Irish, Scotch or Canadian parentage.

"Children's Cries," "Fears of Childhood and Youth," "Childish Superstitions," and other topics of similar character—all taken from the syllabi—were studied at our meetings which were now becoming useful in other ways than those originally considered. Little points of discipline, such as tardiness, coming too early, mutilating neighbors' trees, loitering on corners, with many kindred topics were brought up at the close of each discussion, the mothers giving most hearty and intelligent co-operation as our own reasons for such discipline were learned; in fact, this mode of procedure has grown so helpful that a note book is now kept on my desk during the month, in which each teacher is at liberty to jot down any point she wishes brought before the next meeting.

These are carefully compiled and occupy their own place in the programme, under the head of "Other topics of interest." As a single illustration of the advantages which may arise from this mode of procedure the following is given: During the year 1894-5 an epidemic of diphtheria raged in the city and the Hancock, in company with every other school in the city, was closed several times on account of this disease; at every meeting of the present year, attention has been called to the prevailing tendency of children to stand in the damp, and pupils have been constantly cautioned against exposure to early morning air unless protected by proper clothing and sufficient breakfast. There may be a possible connection between these precautions and the fact that the Hancock is the only school in the city in which scarlet fever or diphtheria has not occurred during the current year.

By the end of June, '95, our society had begun to realize some of its possibilities. One of the members had written an excellent paper on, "Do Boys Require as Careful Moral Training as Girls?" which resulted in more strenuous efforts to suppress the cigarette habit and other evils to which boys are exposed, and, at the last meeting of the year, an unusually large number came to elect a secretary from their own number and to present a list of topics for the next year's discussion.

(Copy of Letter sent out in September.)

HANCOCK SCHOOL, Sept. 9, 1895.

To the Parents of Pupils attending the Hancock School:

MY DEAR FRIENDS,—

Our school is now commencing its fourth year, and we are very anxious to do for the children all in our power. This cannot be accomplished without an individual knowledge of each child, and this cannot be gained until parents and teachers work together, as members of one family toward one common end; will you not, therefore, try to become well acquainted with your child's teacher during the coming year, so that you can talk freely to her concerning your child's needs?

Our next Mothers' Meeting will occur Tuesday, Sept. 24, at a quarter to four; the following subjects will be discussed:

1. What should the public school do for the child?
2. The duty of each parent to the truant law.
3. The amount of money each child should spend for supplies.
4. Other topics of interest.

Hoping you will kindly make an effort to be present, I am, with sincere wishes for a happy, prosperous year,

Very truly your friend,

HARRIET A. MARSH.

HANCOCK SCHOOL.

HARRIET A. MARSH, President.

MARY A. C. PATTERSON, Secretary.

LIST OF SUBJECTS FOR MOTHERS' MEETINGS.

September, 1895, to January, 1896, inclusive.

SEPT. 23. (1) What ought the public school to do for the child? (a) Should the government in school and that of the parent conform? (b) Three requisites of good government. (c) Necessity of teaching self-control. (2) Duty of parent to truant law. (3) Economy in school supplies.

OCT. 24. Good health is necessary to good mentality and morality. Three things conducive to good morals: (a) Healthy constitution at birth. (b) Proper food. (c) Proper care of the body. Care of the teeth.

NOV. 21. Effect of different foods upon the body, as bone, muscle, and flesh-producing foods. Some ways in which food may lose its nutritive qualities by poor cooking.

DEC. 19. Intemperance. (a) In how many ways may parents be responsible for their children's intemperance? (b) Intemperance in food; in drink; in pleasure. (c) Use of tobacco. (d) Necessity of teaching self-control in all things. (e) Relation of poor food and poor cooking to drunkenness.

JAN. 21. Diseases. (a) How dangerous diseases such as small-pox, diphtheria, scarlet fever, etc., are spread. (b) Best means of prevention. (c) The germ theory.

Please *preserve* this outline for future use.

Fifty-four women met in September to consider the above lists of subjects which represented, in the main, the topics chosen by themselves at the preceding meetings.

The key stone of interest was reached, however, when we commenced the study of physical needs in October. Sixty-two members were present, and from the ill concealed anxiety shown in many of the questions asked at this and subsequent gatherings, the vital need of instruction in this direction was plainly shown.

To illustrate, somewhat, the line of thought followed by these mothers, extracts of their discussions are given as nearly as possible in the language in which they occurred.

The first question brought under discussion was the relationship of good morals to good physical health. See outline for October.

About seventy-five per cent. of the members seemed to consider this proposition unsound, but when questioned: 1st. "Do certain kinds of food ever make you uncomfortable, ever give you the headache, ever cause dyspepsia, etc.?" 2nd. Do these physical conditions ever affect your temper, influence your speech, your treatment of

others, or cause you to punish the children for actions not, in themselves, wrong?" a general assent was given, and, by carefully leading up to the subjects, an intelligent recognition of the principles put forth in 1 and 2 was gained.

3rd. What kinds of food should be given very young children if we wish them to have good teeth? The Scotch and English seemed to think that mothers should make oatmeal an article of diet for themselves and children, beginning this regimen by giving the child milk to which a very little oatmeal had been added, and gradually increasing the quantity as the child's stomach became stronger. The question whether unpalatable food is beneficial or nutritive in any marked degree now arose and was answered by a prompt and decided negative.

It was generally agreed that oatmeal should be made a much more general article of food than at present, and that "Rolled Oats" is the best preparation for family use. One mother, aged 79, of New England birth and ancestry advocated the superior qualities of boiled wheat meal as an article of children's diet, advancing, in support of her theory, the statement that she had raised a family of eleven children to hearty, healthy maturity, on this as a staple article of food; she also stated that her family had always been vegetarians. No one supported the old lady's opinions, and, in the interest of science, I wondered if diet had anything to do with the fact that one of the eleven children is insane, one other so nervous as to appear mentally unbalanced, while two others died under thirty of consumption. In justice I must add that another daughter living in the East is considered an artist of some ability, and the rest, living out of the city, are unknown to us. How to make oatmeal more generally palatable was then discussed and resulted (in the few weeks following) in various experiments in the making of oatmeal porridge, gruel, cookies, bread, snaps, etc., samples of which, with the recipes for making them, were sent me.

The mothers concluded that too much sweet food injures the teeth in two ways, first by its direct action upon the teeth; secondly, and more powerfully, by the acids its use engendered by causing a disordered stomach.

It was generally concluded that a judicious quantity of pure sugar candy is good for the child, that the craving for this sort of food arises from the fact that sugar supplies heat to the system much more rapidly than other foods, as butter, corn meal, etc.¹ A number, about 10%, considered the adulteration of candy with white earth, the undesirability of coloring candy green, etc., and decided that ordinary lump sugar and the old-fashioned sticks of barley sugar and lemon candy are the best preparations of this kind of food.

It was generally conceded by all who spoke that Germans and Scotch have the best teeth—Irish the poorest. Germany's general diet of rye bread and pumpernickel was given the credit for this, and much stress was laid upon the fact that these articles of food are always found upon the tables of rich and poor alike. Pumpernickel was considered to possess a two-fold value, inasmuch as its hardness gave the jaws and teeth much needed exercise.

The Irish were supposed to have soft teeth because of their potato diet, and in support of this theory was stated the opinion of a Detroit dentist, a very intelligent scholar, who tells us that the Dental Associations all over the country, have tried for years to find some suitable

¹ Editor Bok, of the *Home Journal*, is responsible for the statement in regard to sugar. If he be correct, why does not the child show a similar craving for butter, which stands first in the list of heat-producing foods? What of the Esquimaux child?

filling for the teeth of American people of Irish descent, as the gold and other substances used are too hard for their softer teeth; he made the same complaint in reference to the teeth of people not Irish who live in Ireland until they are sixteen or older.

4. Do decaying teeth ever cause lung or throat trouble, disorders of the stomach, etc.?

Many of the mothers present gave a touching, personal testimony to this truth, and all agreed that these decaying substances, dropping or falling down the throat, were highly productive of these evils.

Soap, in very sparing quantities, was considered destructive to the animalculæ collecting upon the teeth and to the germs of diphtheria in their early development. Precipitated chalk was recommended as a dentifrice; first, because it neutralizes the action of the acids in the mouth, and secondly because its mode of preparation precludes the possibility of its scratching the enamel.

The cheap tooth brush was denounced because the hairs becoming loose are apt to pierce the gums or get between the teeth, thus giving rise to inflammation.

Gum chewing was found injurious, inasmuch as it kept the salivary glands in a state of constant action, causing undue and exhaustive secretion of saliva, and keeping the stomach in a state of expectancy.

In November the discussion of foods and beverages took a wider range, as follows:

1. *Question.* Are the children of the present day as fond of fruit as the preceding generations? If not, why? Is it a natural step in man's evolution, or is it caused by the child's growing fondness for, or habit of gum chewing, cigarette smoking, etc.?

This question arose from the fact, that, within the last ten years there has been a gradual diminution in the number of apples brought by the children for consumption, at recess. Various answers were suggested. 1. Apples have risen 50% in price during the years mentioned. 2. The little candy shops no longer have the pyramids of apples standing in the windows, as formerly, and the children, not seeing them, buy other things. Other facts brought out were: 1. That as demand generally regulates supply, the shop-keepers lessened their stock of apples because the children cared more for other things; or else, that the confectioners created a demand for goods yielding greater profit. 2. That although fruit is much dearer than formerly, children, having more spending money than immediate predecessors, could buy it if they desired. 3. That the amount of candy, gum, cinnamon and cigarettes consumed, had gradually increased. 4. That the consumption of more highly flavored candies destroyed the desire for apples. 5. That gum chewing, when excessive, probably produced a craving for something slightly stimulative; that cigarette-smoking did the same in much greater degree. 6. That gum-chewing led the way to tobacco-chewing, in many instances. 7. That both, by excessive excitement of the salivary glands, were conducive to the habit of spitting. 8. That spitting produced (under aggravated conditions) a necessity for stimulant, or might result in consumption. All of the above is an expression of very general assent to thoughts and questions, in many instances suggested by myself with the object of starting a discussion. The *assent* to these suggestions, however, was general and hearty, showing that although some of these thoughts had not occurred to them before, their experiences on these points concurred with mine. We now come to their original and unassisted expression.

Which is better for children, coffee or tea? 1. A girl of twelve, very nervous, also a-boy of fourteen, both children born in this city, mother

American, father of German descent. Both seemed to need the stimulative effects of tea, although they were not allowed to drink it very strong. Suffered loss of appetite without it (especially the girl) and seemed to need it after long fasting or when fatigued. The younger children of the same family do not care for tea and do not seem to need it. The mother, herself, is not very strong and finds herself "unable to do anything before she has her coffee in the morning." An old English woman, who has lived in America since girlhood, also expressed the same need of coffee in the morning, and from 10 to 20% of the entire company (nearly all Americans) acknowledged the same habit.

One German woman (husband German also) has two girls, born here. One is of natural size and mental strength; the elder (aged 16) is a dwarf, looks like a plump child of 8, and is mentally developed about as much as the ordinary pupil of nine or ten; is also very slow of expression. The mother stated that this child seldom drinks, either at table or between meals, and would not taste tea, coffee or milk from earliest infancy; the younger girl follows the habits of ordinary children in these respects, and the poor mother seemed anxious to know if her elder daughter's peculiarity arose from or was the cause of her defective organization. I remembered reading that an excess of certain fluid matter in the system caused undue growth or size as that of giants, and the reverse was true of dwarfs, but my extreme ignorance on this point rendered me careful of expression, though I wish very much for more opportunity to study this subject and wonder if all dwarfs show this peculiarity; also, if the opposite is true of giants.

All the mothers (except two mentioned) strongly deprecated the use of tea by children, thought warm milk and water at meals much better, and said children would *never* need the stimulative effects of tea unless trained to drink it from infancy. As for themselves, tea was, in the majority of instances, a necessity brought about by the habit of a lifetime. That black tea and uncolored Japan were the only brands allowable, and that Young Hyson should never be seen on the table.

Coffee was received with much greater favor, several of the mothers told me it was "like meat," and at least 50% of the assembly allow their children a cup of weak coffee in the morning because as they said, milk was more expensive, not so agreeable to youthful palates, and less productive of warmth and nutriment. About 10% said the children would not eat breakfast without it. One American woman living with Germans, considered cold, strong coffee better than brandy as a remedy for heart failure. An Irish woman, also an American, concurred.

Three of the mothers (American) thought the use of tea or coffee *might* lead to intemperance, and advocated warm water as a beverage at meals, or a combination of one-third coffee and two-thirds water, while the whole assembly seemed quite anxious on this point though unable to advance any decided opinion.

The general idea was that coffee should not be given to a child of full habit, rapid pulse, etc., that it was more adapted as a beverage to use in cold weather than warm, and might be beneficial, if taken in small quantities, to children with weak circulation, as indicated by blue finger tips, etc.

Reference was here made to the robust Polish children who bring a noon-day lunch consisting only of black rye bread and black coffee, the latter in large quantities. Opinion stated that this "coffee" is a decoction of toasted bread, grains, etc., sweetened with molasses. Hence it did connect with subject of discussion.

Spices. Several of the parents brought out the idea that highly seasoned food was injurious to children, except in cases where the stomach needed stimulative food, that it created thirst and was a great cause of intemperance among travelling men. This statement received a general assent.

One woman (American) recommended the use of cocoa as a beverage, but only two agreed with her, the others seeming to regard it as undesirable. One American said it "thickened the blood," two others, that it was too heating, produced flesh too rapidly, etc.

Intemperance. The women here entered into a general and somewhat assisted discussion of the relation of food and poor cooking to intemperance, and expressed themselves very strongly as follows:

1. That very frequently intemperance arises from thirst, or craving for stimulant.

2. That this craving is often caused by weakness of some organ, as liver, etc.

3. That this weakness may be inherent, as the result of insufficient nourishment, particularly in early childhood.

4. That it is necessary to learn what foods are best calculated to supply the nutriment needed by different parts of the system, and to practice the modes of cooking which will best preserve the nutriment contained in each.

5. That careful study of these subjects, will do much for the cause of temperance in succeeding generations.

An American gave as her opinion, supported by the alleged testimony of physicians, that the use of tea by very young children was conducive to kidney trouble.

One woman (Dutch) said that a catholic priest stationed among German laborers expressed to her his firm conviction that the direct cause of much of the intemperance in his parish was found in the poor, innutritious bread consumed by these men.

A general discussion of the length of time that primary school children should go without food, then followed.

It was generally agreed that pupils of five or six years should not fast more than three or four hours, and that some slight refreshment, as a bit of bread and butter, a biscuit or an apple should be brought for the short intermission occurring at 10.20.

The following thoughts were also brought out: Certain kinds of occupation require certain kinds of food; that growth in intelligence is marked by a corresponding attention to this law, a recognition of which runs like a tiny thread through the history of savage peoples and finds a partial expression in the belief of the North American Indian who eats the heart of an enemy that the bravery of his murdered foe may be imparted to him.

A few of the mothers (vegetarians) spoke of the advantages of an exclusively vegetable diet, stating that grain contained all the nutritive qualities of meat, quoting the ox and the elephant in support of their theory; the opposing faction stated in denial, that, as one pound of pork yields about as much nutriment as ten pounds of corn, man would need not only the appetite but also the stomach of an ox to thrive on this restricted regimen; also, that we never eat the flesh of carnivora, but merely that of grain or grass-eating animals, meat is, therefore, merely vegetable matter in condensed form—objection, are fish carnivora?

The fondness shown by epileptics for meat. The tendency of children to imitate them—ought they to be allowed in school?

A general plea for greater use of fruits, milk, and vegetables was made at every meeting in which the subject of foods was discussed,

and I wish it were possible to note in this article the many suggestions given in reference to this topic, at each gathering.

Below is given, in brief, the outline considered during the last half of the year; our largest attendance was reached in the months of January, February and March, when from eighty to one hundred persons were present at the discussions.

February 25. *Children's Lies*; can little children always distinguish between reality and imagination? Can older people? Why?

March 24. *Purity*; responsibility of parents and teachers; purity in conversation at home, etc.

April 28. *The subject of foods concluded*; spices and condiments, uses and abuses; sudden changes in diet.

May 26. *How we teach children to be selfish*; reasons why this generation will be particularly so.

June 16. *What shall we do for our children in vacation?* Plans for their welfare. Selection of topics for next year.

A few of these selected topics are given, as follows, to indicate the general trend of thought:

1. Obedience; government of children.
2. Ought boys to work while attending school?
3. Ought children to drink tea or coffee; does either retard growth?
4. Are people of limited means more foolish in their expenditures than wealthier people of the same mental capacity?
5. How and when should girls be taught to sew?
6. How can we teach girls to dress more plainly at school?
7. How can children learn to be more thorough, thoughtful, independent?
8. How can children be taught to be less selfish, more useful?
9. How can greater respect for parents be inculcated?
10. How many children learn contentment? To feel satisfied with home and its surroundings?
11. Should parents choose an occupation for children while yet they are young?
12. Children's dishonesties. Appropriation of missionary money or other public funds, even with intention of replacing it; use of cancelled stamps. Responsibility of public trusts.
13. Please recommend or select a course of reading for children from fourteen to fifteen years of age.

Of the above questions, numbers 1-2-6-7 received the greatest number of votes; among other subjects for next year's discussion are—

1. Necessity for more sleep.
2. Benefits arising from going barefoot.
3. Danger of sitting on stone steps.
4. Cold water as an aid to digestion.
5. Necessity of laughter and cheerful conversation at meals.
6. Bathing; clothing; care of the eye, ear, teeth, nails, hair, etc.

The possibilities for usefulness in this line of work grow daily, and the teacher is made to feel her own limitations by such questions and requests as—

"How can my girl grow stronger?"

"What can I do to interest my boy?"

"Please name some book that will help me."

As an answer to the last need, the nucleus of a small circulating library has been formed which, it is hoped, will add considerably to our helpfulness.

The results of these meetings as observed up to date, are—

1. Children are much better clad, and the provision of rubbers,

umbrellas, and other protection against inclement weather has improved about thirty per cent.

2. An ever growing gentleness on the part of the children, and a gradual disappearance of the stiff, formal relation of pupil and teacher.

3. An awakening on the part of the parents to the fact that maternal instinct does not bestow the knowledge needed in the training of children, and that the sacred office of motherhood calls for the same careful preparation as is accorded other vocations.

4. A consequent appreciation of and sympathy with the teacher's difficulties.

LITERATURE.

FRIEDRICH WILHELM DÖRPFELD. *Aus seinem Leben und Wirken.* Von seiner Tochter Anna Carnap, geb. Dörpfeld. pp. 664, Gütersloh, 1897. *Gesammelte Schriften von Friedrich Wilhelm Dörpfeld.* 12 Bde. Gütersloh, C. Bertelsmann, 1894-1897.

The life of Dörpfeld by his daughter Anna is characterized by great simplicity, unaffected plainness, a fullness of details that leads occasionally to considerable diffuseness, and a strong filial love that dwells on the homely, plain, but fundamental virtues, the domestic simplicity of the quiet German home in Rhenish Prussia, and the self-sacrifice and intense devotion to an ideal that made Dörpfeld a unique "teacher of teachers" in the classic land of pedagogy. The book is largely autobiographical, being to a very great extent extracts from personal letters and addresses. The daughter was, for the last forty-two years of her father's life, his almost constant companion, his pupil at school, his favorite at home, and later his assistant teacher; as she grew up, being the eldest of the children, she came still more into a share of his life. When Frau Dörpfeld died, in 1870, the daughter became her father's nearest friend and constant companion, sharing his labors, his joys and sorrows, entering into his ideals and sympathizing with him in all his aims. This closeness of insight into his inner life and intimacy with his daily thought has given a peculiar charm to the biography.

Dörpfeld came of a stock that loved independence of thought. His grandfather's literary club assembled the weavers, blacksmiths, farmers and wheelwrights of the neighborhood to discuss mathematical problems, theorize and argue on religious and scientific matters, read and speculate in philosophy, study Kant and Krug and Elzipon, read the German classics, or find consolation in Tersteegen's mysticism. The boy grew up in such an atmosphere and looked with pity on those young people who have a philosophical system presented to them ready to their hand in the lecture room, where they passively absorb it. Such come into their inheritance too cheaply and later betray this cheapness in their lack of independence of thought.

When only twenty years old, Dörpfeld resolved to make it his life-work "to strive to become ever more completely (1) a Christian teacher, (2) a Common-School teacher, and (3) a contented common school teacher." He kept this as his aim throughout life, never seeking preferment, but trying to be an example to all his fellow-teachers, by devotion to his professional duties, contentment with his surroundings, and constant struggle to assist others in their professional preparation. In this way he developed a system of lectures and conferences with the teachers of Rhenish Prussia nearly as extensive in its range and greater in its influence than the courses offered by any professor of pedagogy at the universities. He was the "father of the Bible Conferences," which he maintained for nearly forty years; he founded and sustained for thirty years the teachers' conference in Barmen, the members of which called him affectionately "Father Dörpfeld;" for a number of years he delivered additional courses of lectures on psychology in Barmen, Lennep, and Düsseldorf; at Ronsdorf, in his later years, he led a conference in genetic method in religious instruction and ethics; and the great Union

of Teachers and Friends of Education in Rhineland and Westphalia, with its 500 members, was mainly his creation and worked under his guidance.

When Dörpfeld was made a member of the School Conference in 1872, it was the first time that the higher school authorities had deigned to recognize the need of consulting the views of any of the grade teachers. There in the midst of the Prussian School Department at Berlin, he poured out a stream of original ideas that he had been evolving in the quiet of his Rhenish home for a quarter of a century. Many of these were incorporated as essential features in "*die Allgemeinen Bestimmungen*" that followed. Dörpfeld's "*Grundlinien einer Theorie des Lehrplans*" grew directly out of the discussions at Berlin, and explained in greater fullness his views on the subject of the curriculum. The Cultus-Minister Falk acknowledged his services, decorated him with an order, and raised him to the rank of Rector.

He had long been suffering with asthma and at times was compelled to give up his work. In 1879, owing to the state of his health, he was compelled to ask to be retired from regular school duties, and from that time on he devoted himself to his school journal (*Evangelisches Schulblatt*) and his many conferences. He died October 27, 1893.

His Collected Works embrace pedagogical psychology (2 vol.), special didactics (3 vol.), addresses (1 vol.), school organization (3 vol.), ethics (1 vol.), and miscellaneous (2 vol.). The first of these includes "*Denken und Gedächtnis*," which has been translated into Dutch, Hungarian and English. It is, in fact, the only one of Dörpfeld's writings that is accessible to the English reader. Most of what he wrote is intensely local in its color and laboriously thorough in its clearness. To be made easy of use, his writings need to be re-edited in greatly abridged form.

Dörpfeld preferred to call himself a follower of Comenius and entered with the keenest zest into the plans for that great teacher's recognition through the celebration of his 300 anniversary in 1892. But from early youth he had been attracted by Herbartian pedagogy and became a staunch though independent follower without branching off into the refinements of methodology elaborated by Ziller and his disciples. Thus all that Dörpfeld stood for is characterized by the utmost simplicity. "The Formal Steps" are by him reduced to the three parts of the neuro-muscular arc and lose all artificiality: I *Sense Perception* (receptive), II *Thought* (central process, long circuited), III *Practical Application* (executive action). In the arrangement of the curriculum, he made the central point the demand that "the Content Studies, and not the Language nor the Form Studies, must be the didactic basis of the entire instruction." He opposed Ziller's Concentration idea and pleaded for *all the content studies* in due prominence, but in particular for science lessons. These, he says, form the most fruitful basis for language work, especially because in them the pupil learns to express himself clearly, definitely and concisely. All books are reading books and as such would be better classified according to *style* than according to *matter*. "Practice reading" and "pedantic thoroughness" train away from love of reading and right methods of rapid reading with alertness of mind and interest.

Dörpfeld seems, strangely enough, to have given but little attention to that other bulwark of Herbartian pedagogy, the correspondence of individual and race development. In ethics, to which he devoted great attention, he missed almost entirely the genetic standpoint. The feelings are merely attendant phenomena, disturbing clear thought and deserving only to be repressed. He does, indeed, show in a very clear light how doubt is faith in its birth throes, and that before doubts have

arisen in the little child's mind, the latter is incapable of faith and belief, but that what we call childish confidence is, subjectively considered, to be classed as supposed knowledge and not as belief at all. From this standpoint he shows the need of rationalistic teaching and the immoral tendency toward disbelief that results from teaching on authority. Just as Socrates taught that virtue is founded on knowledge and that the ignorant man cannot be virtuous, so Dörpfeld here teaches that belief is founded on knowledge and that the ignorant man cannot be a firm believer. He plants himself squarely on the same ground as that on which Vilmar stands in his work entitled "*Die Theologie der That-sachen und die Theologie der Rhetorik*," and accordingly demands, from this point of view, vastly greater earnestness in and attention to the *continuous revelation of God in nature*. This is the basis and starting point of rational ethics, and, in particular, is of fundamental importance for the religious instruction of children. Oneness with nature is the first naïve standpoint, and the dualism of God and nature has only bred irreligiosity.

Perhaps the most characteristically Dörpfeldian of all his writings are those on the family as a basis of school organization. The work, of which Diesterweg said, "Let no one henceforth speak on this subject who has not read this book," is Dörpfeld's "*Die Freie Schulgemeinde und ihre Anstalten auf dem Boden der freien Kirche im freien Staate*." The announcement in 1892-3 that the school-communities throughout Prussia were to be abolished filled Dörpfeld and many other friends of these institutions with dismay and he was persuaded to write a further plea in their defence. This is his "*Schwanengesang*" under the title "*Das Fundamentstück*," and was received from the printer only a few days before he died. The school is most intimately and closely related he says, not to the church, not to the State, nor to the social-political bodies and municipalities, but to the family. The family is the parent institution of all of these. The school grew out of the family when culture became too extensive and technical to be mediated without special training and teachers. Then it became pedantic in proportion as it lost the atmosphere of home life. In the home education, physical and spiritual, temporal and sacred, lower and higher ways and means are so intimately mingled and interwoven that neither hinders the other, but each reinforces the other. The child's whole being is embraced within the little universe of home. Unpractical and forced theories of education originate in the school-room, or the professor's study, but not in the nursery at home where there are children to put them to the test. The wild exaggerations of Locke and Rousseau were reduced to reason and practical application by Pestalozzi. It was in his own home life in training Jacobli that "Father Pestalozzi" himself learned "how Gertrude teaches her children." The home is the place in which the preacher best learns to preach, the teacher to teach, the educator to develop, the ruler to control and train, the historian to relate the story of the past and the musician to tune the soul with genuine, holy, wholesome music.

Dörpfeld's plan of school organization to preserve this precious home influence was very nearly in realization in the section of Rhenish Prussia about Elberfeld-Barmen, and bears a strong likeness, I am told, to the old New England District School Committee system. The school community, in Dörpfeld's organization, is a separate corporate union of families, based on the rights of parents and organized for the purpose of educating their children. It is different from the church organization or parish, and by no means coincides with the municipal or political district. It is purely a *SCHOOL community*, choosing the head teacher through its electoral board, exercising control by

the school board, under the presidency of the local pastor, and contributing to the support of the schools by fees and gifts from the associated families.

The home is the only participant in school matters that has a full, all-sided interest in the school, and for this reason the others, church, State and municipality or political community, should never be allowed to usurp chief control. Pedagogy will never come to its full recognition and adequate representation until that constituency that is directly responsible for the whole child's development and welfare directly shares in the management and administration of the schools. When the State entirely supports the schools and makes them free, with force text-books, free stationery, and free dispensary, the parents lose their feeling of responsibility and the instinct to care for their young is weakened. They come to feel that the State is responsible for the education of the children. The interest in the school is weakened and the rights of the home are neglected.

Hence, too, the ungraded school under the single teacher comes the nearest to the ideal, because it is the nearest to being a unit such as the family is. The larger the school, and the greater the number of classes, the more it departs from the family type and becomes a pedagogical factory. In such a factory the Jesuit maxims of rivalry and emulation find their place, but the pupils never learn there what co-operation and division of labor mean, because they are classified so that all those together will be of the same presumed attainments and will be working to secure exactly the same results. To substitute for this competitive spirit the co-operative spirit, Prof. Dewey too, in Chicago, demands the departure from the present graded system, in order to bring together children of different ages, temperaments, native abilities and attainments, and thus give the school a community of spirit and an end to be realized through diversity of powers and acts. For the same reasons Dörpfeld always remained loyal to the ungraded school, always opposing, even in large cities, schools of more than three, or at most four grades.

The plan contemplates regularly organized deliberative bodies corresponding to the successive grades of executive authority:

1. *The Local School Community* with its school board and school representatives.
2. *The Commune* with its school deputies.
3. *The District* with its school synod.
4. *The Province or County* with its county assembly.
5. *The State Department* with its State school synod.

Beside this official participation in school administration, parents' meetings must be held, the members of the school board, assemblies, and synods must come together, not to discuss official matters and technical points, but to develop the school consciousness, to gain a view of the range and depth of educational affairs and to extend public interest in them. And lastly, the public press must be enlisted in the same direction.

Dörpfeld was an ardent advocate of elementary social science in the common school, and among his most extensively used school books were the little "Repetitoriums," covering, in addition to the whole range of the natural sciences, the rudiments of psychology, government, army, the courts, minings, manufacture, transportation, and dissemination of news, commerce, church, school, public hygiene, social and political communities, unions and associations, and many other topics not usually included in any course of study.

HERMAN T. LUKENS.

Die deutsche höhere Schule. ARNOLD OHLERT. Hanover, 1896. pp. 344.

The author starts from the oft quoted statement of the present Emperor that the German gymnasium should be placed on a more national basis, and should turn out Germans and not young Greeks or Romans. National science and German literature and history should be the basis of an education that can be called modern. Ancient languages for young children are a barbarity. The book is a detailed description of the culture material that should be included, grade by grade, and subject by subject, with copious references to text books, in a radically modern gymnasium such as he postulates but which nowhere exists to-day.

L'Education dans L'Université, par HENRI MARION. Paris, 1896. pp. 395.

This is a clear digest of organization, degrees, administration, discipline, reforms, methods, etc., of the French Lycées.

L'Education Populaire des Adultes en Angleterre. Paris, 1896. pp. 300.

This is a description, by various members of a commission for the purpose, of evening courses, university settlements and extensions, technical institutions, libraries, etc., chiefly in England, but partly also in this country, with a preface by F. Buisson.

Volkshochschulen und Universitäts-Ausdehnungs-Bewegung. ERNST SCHULTZE. Leipzig, 1897. pp. 119.

If social danger lies not so much in disparity of wealth as in that of knowledge, university extension is a great and needed movement of social amelioration. The extension movement is described, country by country, with copious literary references.

The Open Church is a new illustrated quarterly devoted to applied Christianity, and edited by E. B. SANFORD, 150 Fifth Ave., N. Y. City. Church gymnasium, parlors, kitchen, reading rooms, sewing schools, helpers, endowments, new methods of prayer meeting and funerals, auxiliary organizations, Chinese missions, and how the church can improve the condition of the masses, Dorcas clubs, church kindergartens, are the leading topics of this first interesting number. Many new pedagogical devices are represented, as imaginary tours round the world, boy brigades and girl guilds, dispensaries, baths and swimming pools, university extension, insurance clubs, employment bureaus, wood-yards and evening classes.

At the proper point in one funeral method the body sinks by invisible machinery in front of the pulpit to a grave, and thence goes to a church vault, whence it can be buried at any time the family may elect. This plan makes for economy and health.

Die Psychologie in der Religionswissenschaft. DR. EMIL KOCH. 1896. pp. 146.

"Nothing has so enslaved psychology as religion, theology and the metaphysics it engendered which made psychology formal and subjective." Faith, the infinite, transcendent, sublime, myth, worth, etc., are proper psychological themes. The author has a very limited idea of what psychology means, and what it can, and we believe will, soon do for the religious consciousness.

Religion in Boyhood. ERNEST B. LAYARD. 1896. pp. 91.

This is a series of hints on the religious training of boys. Character is formed by admiring noble deeds, especially those of Christ. Pun-

ishment should be consistent and fit the offence. Prayer, church going and generosity should be inculcated as the chief early virtues. The book is feeble and written with almost no knowledge of the nature of youth. Sunday observance and belief in the Bible are not quite the *summum bonum* but nearly so.

Jahn als Erzieher, von I. FRIEDRICH. 1895. pp. 192.

We have long needed a brief statement of the leading facts and motives in Jahn's life, and the ideas and methods of his teaching, by some one who had carefully digested all the copious literature on the subject, and has pedagogic instincts and experiences,—and here it is. The most striking thing about this great patriot and teacher is the breadth and depth of his idea, which, to our thinking, are richer than all novel methods.

Comenius und Pestalozzi als Begründer der Volksschule, von DR. HOFFMEISTER. Leipzig, 1896. pp. 97.

This is a clear and admirable digest of the educational views of these two educational pioneers. It is scholarly, with copious notes and citations.

Die pädagogischen Anschauungen des Erasmus. DR. HERMANN TÖGEL. Dresden, 1896. pp. 130.

This is a very scholarly digest, from all the sources, reference to which crowd the foot notes, of the views and work of this great genius in pedagogy whose star seems again in the ascendant. It is somewhat disheartening to see how many of the best modern things he has anticipated. Interest, apperception, child study, culture stages, object lessons, will training, etc., are all here.

Öffentlicher Kinderschutz. DR. H. NEUMANN. 1896. pp. 687.

The last part of this comprehensive treatise on public institutions for the protection of children is now out. It treats of child mortality, childbirth, nurses, preventive medicine, the chief juvenile diseases punishment and houses of detention, orphans' aid societies and schools. It is a very comprehensive work, with copious literary references for each topic.

L'Hygiène Scolaire. Par les docteurs LABIT et H. PALIN.

I. Le Milieu Scolaire. Paris, 1896. pp. 310.

II. Les Maladies Scolaire. Paris, 1896. pp. 411.

The entire power of education which a republic needs requires special attention to school buildings, privies, furniture, books, writing, ventilation, lighting, and to diseases like school myopia, rickets, examination, food and dress, vaccination, etc., and each of these themes is concisely and clearly presented, so that these trim little volumes are for parents as well as teachers.

Eyesight and School Life. SIMÉON SNELL, F. R. C. S., Ed. Bristol and London, 1895. pp. 70.

This expanded lecture covers all the ground of the chief eye diseases and the relation of eye defects to reading, writing, needle work, physical exercise, etc., and is as comprehensive, all in all, as anything known to the writer in this field. The superiority of vertical script is shown by a number of interesting photographs.

Le Pain et la Panification. LEON BOUTRAUX, 1897. pp. 358.

This is a biology-chemistry, and, in a word, a philosophy of bread and bread-making.

How to Feed Children. LOUISE E. HOGAN, 1896. pp. 236.

School life is the most important stage as regards adequate nutrition. The dietary should be abundant and variegated. The book is a valuable and practical compilation.

Bourneville, Assistaine, Traitement et Education des Enfants Idiots et Dégénérés. 1895. pp. 246.

This report to the Natural Congress at Lyons, in 1894, is most interesting on the pedagogic side, because of the many new mechanical devices depicted in the last chapter. The survey is international, and shows marked progress in methods of educating idiots, and still more in hospitalization and care.

Illustrated Manual of Hand and Eye Training. DR. WOLDEMAR GORTZE. London. pp. 229.

Manual training is not premature apprenticeship, but an important way of training not only hand and eye, but the taste, will and nerve as well. Card, wood, metal and clay work are described in detail, with many new cuts, and a copious literature is appended.

Les Maladies de la Mémoire. DR. ALBERT GUILLON, 1897. pp. 254.

This is essentially a treatise on hypermnesia. The partial and general hypertrophy of memory is first described, and then follow descriptions of its special varieties as the sense of having already experienced something really new, sleep and second states, vesanic and toxic hypermnesia. The bibliography is copious and extends from 1778 to the present. The hyperactivity in drowning is due to its great stimulus of cutaneous reflexes, rapid blood circulation in the brain and so vivid memory. Traumatic hyperaction is due to a stimulus, which, if limited to the motor zone, causes Jacksonian epilepsy, but in the purely intellectual fibres causes excess of function there. If attention rests as in sleep, forgotten souvenirs revive. Great rapidity of thought is a stimulus that calls up reserve tracts. Anæmia and congestion both seem to do it. Hypertrophy of this function is like small trees bearing big fruit. People may be "mad" from too much memory. Imagination is not memory. Here memory is the basis of personality, in the next world of immortality. Fixation is active, passive, and both may be exalted. Loss of a sense reverses the images.

Questions D'Education et D'Enseignement, par M. DAUZAT. Paris. pp. 177.

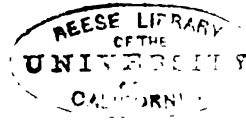
This is a set of papers by an academic inspector on programmes, moral training, ancient history, mnemonics, perspective, mutuality, object lessons, etc.

Children's Stories in American Literature. HENRIETTA CHRISTIAN WRIGHT. 1896. pp. 277.

The boyhood of George Wm. Curtis, R. H. Stoddard, E. Eggleston, Warner, Stedman, Bret Harte, Taylor, Howells, F. H. Burnett, Alcott, Aldrich, Cable, Piske and Mark Twain are very attractively described.

Hindu Castes and Sects. JOGENDRA NATH BHATTACHARYA, M. A., D. L., 1896. pp. 623.

This is a fascinating book by a learned native, giving many facts never before published, and about equally devoted to castes and sects and with 70 pages of glossary. Religion is a product of human policy and theoretic art. The author has no high opinion of any priests or religion. They have had very little to do with morality in the world.



Both the author's characterization of the origins of sects and his generalization about religions and their founders, are full of fresh suggestions.

La Synergie Sociale. HENRI MAZEL. Paris, 1896. pp. 356.

Social synergy has three aspects—past, present and future, to each of which one part of the work is devoted. The outlook is good. Great thinkers work together, although they may not know it. Anarchy is individual, but collectivism will eradicate it.

The Facts of Life. V. BETIS and HORACE SWAN. New York, 1896. pp. 115.

This is a very suggestive and interesting method of learning French, derived from that of Gouin, but with important changes. The topics are home, school, travel, plants, animals, towns, society, industry, government, mental and emotional life. It is a dictionary of the facts of life, with no word of English or of German, or hint as to pronunciation or vocabulary. There is need of a teacher to go with the book. Teaching must be oral, and is based on the facts that language roots in things and acts.

NOTES.

In an interesting address last Fall, at the opening of his courses at the University of Turin, Prof. Vailati urged the importance of more attention to the history of science. Not only should the head of every special department of science teach at least briefly the story of the development of his department, but in lower schools a summary treatment of this field is of great pedagogic and even moral value.

For many years Dr. Walter Channing, of Brookline, has studied the palatal deformities of idiots, and in the *Journal of Mental Science*, January, 1897, describes his method of taking the casts of their mouths; and gives his conclusion, based on about 1,000 cases. Two-fifths of the palates are fairly well shaped. There is no type peculiar to idiocy, and it is yet to be proved that the V shaped palate is a stigma of degeneracy.

In his *Kontrolle-Tafel* for parents, J. Esser prints a convenient register for recording weight, girth, length and strength of arm, lung capacity and strength for each child, with directions, so that any teacher can make good measurements.

Dr. Schmid Monnard, in his observations on the bodily and hygienic development of school children, shows that girls have less power to resist disease than boys, their per cent. of illness being sometimes twice as great. Those living in good circumstances are more often ill than the girls from poor families. Country children are less often ill than those from the city. Sickness decreases from the sixth to the thirteenth year. In new school buildings less are ill than in old ones. These studies proved clearly that military services improved the bodily vigor of the next generation, and that physical vigor declines under the influence of school. During the year of entering school there is less growth in both height and weight than at any period of childhood. From 6 to 10 when there is least power of growth there is the worry and confinement of school. The body grows lighter by night and also on a warm day. From August to October growth is most and from February to June least. In Fall, too, there is least illness and the least excretion of nitrogen. The 7th and 9th year is lowest growth and the first year most.

M. Schereschewsky's thesis on stammering, with special reference to the throat, is a German dissertation of unusual merit, based on a study of 75 cases, and with copious literature and brief history of the topic. The causes in order of frequency, were: a fall, imitation, fright, scarlet fever, a blow on the head. Many were weak and more than half had under development or malformation of throat or palate.

Director B. Hanschman, in his 52 page German pamphlet on the pedagogical tendencies of the closing century, gives a good summary of the views of Pestalozzi, Fröbel and Ziller.

Dr. A. Grabow, in his recent German pamphlet entitled *Vertical or Oblique Scripts*, urges with great detail of direction how to write at an inclination of 58 degrees, which he thinks a compromise between the vertical and ultra oblique methods.

Rector Chn. Ufer reprints in a pamphlet of 56 pages Nedermann's observation on the development of the powers of the souls of children, with a valuable bibliography of the German and English literature of child study. Although an eclectic rationalist and materialist, in the better sense of the word, Nedermann has the merit of being, in a sense, the original child student, for this paper was written in 1787. It had already been translated into French, Italian and English.

Dr. Julius Lewit, in his *Darstellung der theoretischen und praktischen Pädagogik im jüdischen Allerthume*, gives us in 79 pages a valuable and scholarly glimpse of the method of education among the ancient Jews, from original Talmudic sources.

Dr. F. Maack, in a German pamphlet on the Wisdom of the World-Force, a Dynamosophy, and C. Goetze's booklet entitled *The Sun is Inhabited*, illustrate a rank recrudescence of animism. The first, assuming that the world is force and idea, argues that consciousness must reside in force, or it could not appear in its higher product—life and man. "For Thine is the kingdom and the power" is the author's motto for his theistic pantheism. Man is only a transitory stage or phase of the world power. Occult forces rule this mystic world and polarization is its most pregnant symbol, and back of all is the one force of which all that is are modes of manifestation.

Goetze reminds us of Herschel's theory that the willow leaved maculations of the sun might be living monsters in the sun of which we are children, and as we live life must be in our source. Indeed we live inside the solar corona. The solar inhabitants are polar. The heat of the sun is an electrical product. The sun has rings and its center is colder and older. Contemporary science, proud as it is, is all wrong.

It was a good idea to print in a separate 54 page volume Dr. Noble's history of German schools from Rein's handbook and it would be well if it were translated into English. It is the best condensation of the subject that exists; includes universities and has a judicious list of all leading authorities.



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EDITORIAL.

For several years there has been much inquiry for a brief article epitomizing the chief practical results of Child Study with references to the most important original articles, but the editor has felt that the time had not yet come for such a summary. When, however, near the close of a three years' residence as Student and Fellow at Clark University, Mr. Ellis had nearly completed a History of the Philosophy of Education from Plato down, it was felt that such a work would not be complete without a final chapter surveying the Child Study movement, which, under a simple and unattractive name, is slowly doing a work for studies of mind not all unlike that which Darwin did for the methods of nature study or embryology for anatomy, viz., cross-sectioning the old methods of analysis and classification of the powers and activities of the adult consciousness by bringing in a genetic method, based not upon abstraction like Spencer, but on a copious collection of carefully made and critically sifted objective data. Mr. Ellis's paper is confessedly inadequate, but it is distinctly the first anywhere to present the salient results of researches, mostly American, in the field of child study during the school period.

On the appearance of Dewey and McLellan's *Psychology of Number*, the editor (*Am. Jour of Psy.*, Vol. VII, p. 300,) expressed disappointment that in a subject so ripe for psychopedagogic treatment the authors had failed to take account of a large body of facts and suggestions of more empirical order and which involved very different pedagogical applications. In the second article of the present number of the PEDAGOGICAL

SEMINARY, Mr. Phillips has presented in concise form this standpoint, which must supplement methods like those of Dewey and Spier before the principle of number teaching can be rightly understood and applied. The matter of this article is of fundamental importance and is sure to command the careful consideration of every one interested in either the psychology or the pedagogy of arithmetic.

Miss Stoker's and Mr. Hancock's brief articles will interest, it is hoped, a limited number of special teachers.

Mr. Swift's article is also a valuable special study.

The reports of the two Child Study Congresses held last May, the first in Chicago, reported by Professor Van Liew, and the second in Bloomington, by Professor Bryan, speak for themselves. Child Study has grown to such dimensions, and has now so many organs, that it seemed to Miss Wiltse hardly possible or indeed necessary to continue her annual reports of its progress.

The articles have in this number crowded the book notices to a smaller space than usual.

For the last few years the Editor of the PEDAGOGICAL SEMINARY has been overwhelmed with letters asking information concerning organization of Child Study work, literature on various aspects and problems of it, advice concerning reading, requests for our 50 to 60 questionnaires, reprints of the 50 or more Child Study articles already printed, etc. Owing to lack of a greatly needed paid secretary to conduct it, this correspondence has been perforce neglected. To meet this need, and in the hope of being of service to the hundreds of inquirers, Mr. Louis N. Wilson, acting publisher of the SEMINARY, whose address is Clark University, now undertakes to answer inquiries, supply circulars and questionnaires and to develop a central bureau of information for all who desire to do work in this field. In this connection he would be glad to be informed of all meetings held, or to be held, to receive any printed matter bearing in any way upon the subject — monographs, reports of school and State superintendents, schools for defectives, State boards of health, etc., — and particularly to learn of books or articles which have been found of special aid to Child Study workers.



SUGGESTIONS FOR A PHILOSOPHY OF EDUCATION.¹

A. CASWELL ELLIS, Fellow in Clark University.

After surveying the great attempts of the human mind to build a philosophy of education, one can but be impressed with the fact that all of them together are far better than any one, that each is based upon some real facts and principles of the

¹ This is the last chapter of a work which attempts to make an exposition and criticism of the great philosophies of education, to show their relations, and to point out the larger philosophic and psychological ideas out of which the various educational systems have grown.

These are discussed in order, the Greek educational philosophy, including Socrates, Plato and Aristotle; the Early Christian — Neo-Platonic philosophy and the consequent "other worldly" educational theories; the revolution resulting from the introduction of the new method in psychology and philosophy, as expressed principally by Bacon, Locke, Rousseau, Pestalozzi and Comenius; then the opposite swing of the pendulum arising from the "rediscovery of the inner-life" and the growth of idealism as represented by Kant, Fichte, Schelling, Schiller and Hegel; the reaction coming from the application of Herbart's materialism and advanced psychology; the great eclectic and "romantic" educational philosophy of Froebel; and the evolutionary philosophy of Spencer. The final chapter, here presented, is an attempt to indicate the more important factors to be considered and the lines upon which a future and larger philosophy of education must build, as they are suggested by the recent vigorous work in Anthropology, Biology, Physiology, Psychology and Child-Study.

Such a chapter does not hope to be final; for data is as yet too meagre for much safe generalization, but it is hoped, by such a collection and study of the mass of new facts, gathered here and there in the various fields, that several general tendencies may be clearly shown, as never before, that workers may be stimulated by seeing these valuable results and hopeful lines for research, and receive such suggestions as will help to better direct and shape future experiments.

The writer wishes to express his very great indebtedness to his colleagues here, who have so cheerfully and generously turned in to him the cream of their work of years in various fields of original research — often before their own papers were published. Their suggestions, encouragement and criticism have been of great aid. There is hardly an idea presented that has not sprung from or been developed by suggestions from Dr. Hall, to whom I can give due credit only by saying that without his inspiring suggestions in lecture and conference the work would have been impossible. He is not, however, responsible for this crude work and would doubtless not agree with some of the views here expressed.

human soul,¹ none satisfy all. There is, as yet, no philosophy large enough to contain or explain all the facts of the psychic universe, and until this is possible no philosophy of education can be complete.

It does seem that it would be profitable now to make a careful comparison and combine the undoubted truths of all these past philosophies, and to suggest briefly the lines upon which the more recent discoveries in biology, physiology, anthropology, psychology, and child-study indicate that a larger and truer future philosophy of education must be developed.

The Nature of Man as conditioning Education. Whether man is considered to be by nature primarily good or bad must ultimately condition any theory of education. With the knowledge at hand in the past centuries, it is hardly to be wondered at that no thorough discussion of this question was made. First comes the church dogma of the natural total depravity of man; then varying forms of the philosophic concept that a certain faculty, generally the reason, is divine, while another, generally the feeling, is devilish; then the Kantian idea that man is primarily neither good nor bad; and, finally, the worshippers of nature, with Rousseau and Froebel, declare that there is only good in man.

Certainly, each of these theories of the human soul must demand a radically different theory of education. Since all of them survive, all must have some basis of truth.

A rational and scientific theory of human nature can neither accept, in its usual meaning, the church doctrine of the fundamentally evil nature of natural man, nor can it agree with Froebel and the worshippers of nature, in saying that there is naturally only good in man. This confusion is brought about first by not recognizing the relative nature of what is good. Characteristics that in one stage of human development were necessary and good, may from the changes in a later, higher stage of development, be then bad. That human nature is gradually reaching a higher and purer stage of development shows that, fundamentally, man is created by God with the

It is hoped to bring this work fully up to date at the publication of the entire volume next year, and the author cordially invites personal information of future work and of such recent reports as have escaped his notice, bearing in any way upon the problems here discussed or upon related questions.

¹The word *soul* is used in this chapter instead of *mind* as a convenient term to include the entire activities of intellect, feeling and will. It matters not for our purposes here whether readers interpret it as a transcendental entity of some kind, or as a "stream of thought," or complex of associations. The term *mind* is not used, since this term would suggest to a large body of readers merely intellectual activity.

greater tendency upward, or toward the good ; but if there is any truth in the doctrines of heredity and in the evolutionary theory of the fundamentality of the fierce and selfish struggle for existence in past ages of development, then man has inherited a disposition that is in the light of the later developed and higher Christian altruism fundamentally selfish, and hence, from this point of view, bad, however useful it may have been in the race, or may even be now to bridge over certain undeveloped stages before the higher altruism is possible. These facts can hardly be denied, and it is from this standpoint, with this view of the soul, that education must approach the child. This embraces the truth of Froebel, and yet does not ignore the no less potent truth of the older Church dogma. If we take the view that feeling in man is but the psychic extract or residuum of past habits and intellectual practices of the race, then the philosophic concept is included, or, rather, modified to meet the demands of modern science.

Basing education upon this apparently unquestionable foundation, the first and primary duty of the educator is to give the widest and freest possible scope to the natural unfolding of all human potentialities consistent with self preservation, believing in the fundamental tendency of man upward, to look forward to a plane of human development not yet known, and to keep out of the way of the tender buds of developing humanity, with the firm faith that they may grow up to a higher air and purer sunshine than we can now supply.

Secondarily, the educator, knowing the history of the race and the laws of heredity, must ever watch the outcrop of those hereditary tendencies that belong to an age gone by and point to a reversion, or retrogression from the present high scale of being. Upon the immediate recognition and the proper treatment of these tendencies depend the success of education, the weal or woe of human life. Thus, the consideration of human history is all important in the education of man, but cannot set the standard or show the goal. It must fix the lower level, it must guide in elimination, but only a knowledge of a developing human soul and a sublime faith in the divine potentialities of man can furnish the primary motive of education worthy of a God-given and developing race.

Any utilitarian or economic ideal is from this point of view unworthy ; to make it the end of education to prepare the child for the civilization and society in which he moves is low. This does not refuse to recognize that psychologically the only way to develop beyond the present stage of society is first to fully develop up to it ; but it does contend that a philosophy of education which makes the chief end of education to be the preparation of men to fill the various niches in the present

social, political or economical life, sets its face toward a deadening past, and fails to measure up to its possibilities, in not giving an all-sided development to the human potentialities and leaving room for the growth of every latent power, with the belief that there is far more yet in the human soul than we can understand or present civilization give adequate expression. Rest assured that he who has developed the many-sided interests of his own nature will be at the same time well fitted to take his part in what is worthy in the civilization around him and lead it to a higher plane.

Prevailing Educational Inadequacy. In spite of our boasted progress, and there has been remarkable progress in the last decade, the whole plane of education is narrow and teaching tinged with a low and unworthy utilitarianism, which colors our whole American civilization.¹ It is not pleasant to contemplate, but it is true that the educational efforts of our schools are almost entirely directed towards the cultivation of those intellectual capacities which give their possessor power over his fellow man, or ability to heap up the goods of this world, by handling the forces of nature.

The larger part of the pupils leave the schools with no higher aim than to outstrip their neighbors, not to help them, in the pursuit of the comforts and luxuries of life. The better schools do indeed stimulate their pupils to emulate the brilliant thinkers, warriors, statesmen, philosophers, who have heaped up power and treasures of intellectual fame, but why are not the great hearts and souls of the world also set before the students, why do we not give a broad development also to the emotional and volitional sides of life, cultivate more normally the æsthetic, the ethical, the religious sides of human nature? Education seems verily intellect mad.

¹ Such a statement cannot, of course, claim scientific accuracy, though experience in several sections of the country and consultation with many others of larger experience leave no doubt in the writer's mind that this is true. Hattie Mason Willard ("Children's Ambitions." *Studies in Education*, p. 243,) found by tests of more than a thousand children in several parts of the country, that by far the larger number of boys said they were influenced by considerations of money in choice of ambitions, while it was the second highest motive with the girls. Will S. Monroe ("Children's Ambitions," *N. E. Jour. of Ed.*, June 28, 1896) found a similar condition of affairs in his study. Chas. H. Thurber and J. P. Taylor, in "Children's Hopes" (Report of State Supt. of Pub. Inst., N. Y., 1896, pp. 992-1012), show that of 2,000 children examined, the reason given for choices of their ideal occupation were as follows: "to earn money," 25% at 7 years of age, 52% at 12 years, then decreasing to about 30% with adolescence; "I like it," 45% at 7 years; 32% at 12 years, decreasing then to 20% during adolescence; "It is nice," average about 12% all the time. These three motives most prominent in New York children certainly do not indicate lofty ideals.

We seem to forget that if we should succeed in keeping everybody in a comfortable house, with plenty to eat and disease almost eliminated, we would then just be on a level with the beavers and ants, as Benn well says. Intellectual force and rational power are surely high and noble attainments, but cold reason cannot alone handle many of the deeper problems of life, and there are depths of the soul to which it gives no adequate expression.

The great danger to our civilization and to democratic government is that the goods of the country are being heaped into the hands of a few men possessing peculiar ability, and the great mass of humanity are yearly becoming poorer, more unable to care for themselves and more jealous of those favored few. This we are trying to remedy by furnishing to the poor man's son an equal opportunity for education and preparation for this grab-game of life as is furnished the rich man's son. Thus it is hoped by equalizing the talent, that each will be able to get a share of the world's goods more commensurate with his needs. Such a result will never come from the present system of education. Equal education can never equalize ability, and, furthermore, the educated son of the poor man is seen in experience to be equally oppressive with his accumulated wealth and exposed to far more jealousy and hatred from the populace. The root of the whole evil lies in the kind of education given to rich and poor alike. The utilitarian and money-getting, so called "practical," side of life must be balanced off by giving in the schools a deeper appreciation of those spiritual elements in man's nature which alone distinguish him from the brutes. They must feel that there are inexhaustible stores for the human soul, far beyond mere wordly goods or intellectual possessions, and that this truer wealth can be shared by every one to his full capacity without limiting the supply to his neighbor, that of this wealth it may be truly said that he who scattereth abroad increaseth. The full breadth and depth of the human soul must be better touched by our educational efforts, and the abnormal amount of attention given to the logical, intellectual faculties be balanced by a more sane development of those no less human and God-given powers which so potently affect life and character, and whose proper development alone can make the sane and wholesome life. In a word, full unity and balance of the human soul should be maintained and the whole man educated.

No better evidence of the one-sidedness of our educational systems could be presented than the fact that practically every effort of the whole pedagogical world is bent upon devising systems of study and methods, and formal steps for communicating a fund of human knowledge to the children in the

shortest possible time; the test everywhere is facility in passing a series of fragmentary, formal examinations, while few think it worth while to look outside the self inclosed circle of intellect, or cease spinning round in the squirrel cage of their own little system to see whether anything is left outside, or whither the whole movement is tending. It is only a few, therefore, that think it of any value to go down into the philosophic principles that underlie and condition our present systems, or see the necessity for a new examination of the human soul in order that no jot or tittle of its possibilities may be neglected in the educational endeavors.

Factors in Determination of Course of Study. From the standpoint of modern biology and psychology, the course of study cannot be properly determined from an examination of history or of the present needs of adult life. Education seems destined to undergo the same radical and life-giving change of standpoint that biological science has just begun to experience. The examination of the preserved dried bones of the past and of the disjointed cadaver, while still important, is yielding to the study of living tissue and, above all, of growing embryos. Never did the secrets of growth and development open their truths till the careful scientist rose above anatomy and laid the living, developing tissue and organism under the microscope. The composition and laws of living tissue are seen to be not at all those of dead matter; the growing embryo is a far different being from the parent, showing many varied laws and phases of development, all differing from the adult and demanding different food and treatment.¹ Just so is educational psychology beginning to see the shortcomings of the dried systems of the past, and of adult psychology, and is placing the living, growing children under its scrutiny, with results that give every reason to believe that here will be found at work psychic forces and principles of growth that are lost to adult years, as much as are the primitive gill slits and foetal hair of the embryo.

From this point of view, the evidence begins to show that soon the entire curriculum will have to be reconstructed, not with a view to the needs of adult life, but with a view to the needs of the growing organism at each stage of its varying development, the proper food and nourishment at one stage having no necessary logical connection whatever with the requirements of later stages, or even being a positive poison if given after that period—growths probably being demanded at certain periods which must later be sluffed off, absorbed, or transformed.

The problems of pedagogy are shifting from a search for the

¹ See Minot—"Human Embryology;" Ernst Haeckel—"Anthropogenie."

shortest method of giving the knowledge supposed to be necessary for adult life, to an effort to find the outlines of the different periods of psychic development, their demands, laws of growth, and relation to succeeding stages.

Recapitulation Theory. The philosophic speculation of Kant, Herbart and others that the process of development of the individual is parallel to the development shown in the race, and that the culture material utilized by the race in each stage of its upward growth is that best suited to children in analogous stages of development, has been given some scientific basis by the recent work in anthropology and child-study.

This theory while found in the main true, does not hold in the crude way that the early curricula of the Herbartians would indicate. Former ideas, both of the savage and of the child, have undergone a great change on account of a better knowledge gained of each. This knowledge is being enlarged rapidly now, and pedagogy may hope soon for light enough for the working out of this theory in sufficient clearness to give a general outline to the whole course of study.

*Parallelism.*¹ Many theories have existed with regard to the child: First, the child is equal to primitive man; "Human nature is generally akin . . . and the motives of an adult barbarian are very similar to those of a civilized child," says Francis Galton; Second, the child physically and mentally does as the race did; Third, the child is equal to genius. Confucius and Coleridge held this. The youthful Messiah stories so common are said to be a product of this. "Genius is born, not made." The spontaneity and direct mental habits of each, the skipping of logical, conscious processes in thought by children and geniuses, give color to this theory; Fourth, the child is equal to woman. This is primitive in origin, specially prevalent in the Orient. Women and children are sociological equals among savages; Fifth, the child is equal to the alien, or mentally deficient. Solomon speaks of the foolishness of babes. The old proverb, "Children and fools have many lives," expresses this. It is true that acts perfectly normal in a child would indicate insanity in an adult; Sixth, the child is equal to the criminal. The total depravity dogma of the church is one expression of this. The apparent cruelty and lack of high ethical ideals in children furnish a basis for

¹ For this portion of the work I am greatly indebted to the lectures of Dr. Alex. F. Chamberlain, of Clark University.

For a different discussion of this topic of parallelism see the second Year Book of the Herbart Society. Baldwin's "Mental Development" has the most interesting, suggestive and scientific treatment the matter has yet received. This needs now, however, to be rewritten, incorporating larger data of anthropology and child-study.

this theory; Seventh, the child is equal to the aged. The Greek saying, "Men are twice children," or the expressions "second childhood," etc., the old notions of "fountains of youth," "elixirs of life," etc., are all indications of such a conception. Some children have recently been found to believe also that old people shrink away again to the size of infants.

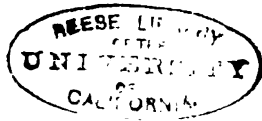
As to the theory of parallelism between the child and primitive man, most recent returns would indicate that :

1. In emotional life, fear, anger, shame, impulsiveness, etc., the parallel is not proven, except in most general terms.
2. In mental content there is a notable parallel, but both children and savage races vary among themselves greatly. They both, however, reason very largely from analogy.
3. The music of each is very similar.¹
4. Both are very susceptible to hypnotic suggestion, and imitation plays in the lives of both a tremendous role.
5. The games and amusements are similar, and the more thorough investigations now indicate that the savage is full of the spirit of play, and appears silent, stern and morose from a very childlike reserve before the ordinary visitor.
6. The use of idols, fetishes, toys, etc., by primitive peoples is well paralleled in the child's doll and other toys.
7. The multiplicity of dialects and the general instability of speech among savage peoples is well paralleled by the instability and the mutations characteristic of the speech of children, and by the special languages they sometimes invent. In scribble writing and in drawing they show considerable similarity.
8. The powerful imagination and lack of regard for truth, specially when dealing with persons disliked, present a striking parallel, as does the holding of one ethical code for friends and another for other people.
9. Very interesting and striking is the natural developing among boys of sociological laws, as reported by Johnston,² paralleling the growth of law in the race; first of common land holding, then of individual ownership, next of monopoly of lands, and finally the rise of socialism clamoring for redistribution—all of this occurring, not because of any moral or ethical ideal whatever, but being first forced upon the weaker by a few stronger boys and then adopted by common agreement and perpetuated by custom.

Likewise, the development of the sense of law and justice,

¹ Consult "Rhythm," by T. L. Bolton, *Am. Jour. of Psychology*, VI, 2, and "The Tshi-speaking People of the Gold Coast of West Africa," by A. B. Ellis, Chapter on Music.

² John Johnson, Jr. "Rudimentary Society Among Boys;" Johns Hopkins University, Studies in Historical and Political Science, Second Series, XI.



and of the ideas of punishment in children, as reported by Barnes,¹ follows very closely the same development in the race; first, of indiscriminating severe corporal punishment, mostly from vindictive personal reasons, then of discriminative punishment for the protection of society as a whole, and, finally, with the added purpose of reforming the criminal.

Periods of Development. The few studies made of the physical development and of the contents of the minds of children, their sentiments, desires, etc., at different ages, indicate quite clearly at least three widely differing successive phases of development in every child, each with characteristics peculiarly its own and demanding very different methods of both physical and mental training.

These periods are, roughly, childhood, adolescence, and manhood,—childhood extending to the period of pubescence, with its marked physical and equally marked concomitant psychic changes; adolescence verging into manhood as this vast psychic upheaval quiets down upon the completion of growth and the full development of the psychic and physical organs for the battle of life.

These very apparent general periods have often been marked before by the philosophers, but a knowledge of their real content and meaning for education is not yet fully attained, though recent study, particularly of very young children and of adolescents, has brought out much that is of the greatest importance for education.

The age of childhood is further divided into two greatly differing periods, from birth till about seven, and from seven till puberty, but that these demand different treatment from teachers is not yet indicated.

Physical Development. From birth until about the seventh year the growth of the body is very rapid, and the sense organs then reach practical perfection. The works of Bowditch, Kotelmann, Pagliani, Key, Hertel, Erismann, Hansen, and Roberts,² all, when due allowance is made for quite small variations on account of racial, climatic and other influences, agree in showing that boys grow slowly from seven till about thirteen, when a rapid acceleration in the rate of increase in height takes place and lasts until the period of puberty is past at about sixteen, when it drops to a slower rate even than before the pubertal shoot. In weight, likewise, the rate of yearly increase is extremely small from seven till about thirteen, but is greatly accelerated from about thirteen to seventeen. Girls exhibit the

¹ Earl Barnes. *Studies in Education*. See also notes p. 176.

² See "Handbuch der Schulhygiene," Burgerstein und Netolitzky, p. 284, for complete tables of all except Roberts and Hansen.

same phenomena except that increase in height begins about two years earlier, at near ten, and continues until fourteen, while the unusual increase in weight begins about twelve and does not cease until fifteen or sixteen. The boys reach physical maturity hardly before twenty-four years of age, while the girls are physically mature at about eighteen.

Brain Growth. The brain at birth is six times as large in proportion to the size of the body as it is in adult life,¹ weighing about 372 gmms. ; all the nerve cells ever to be in the brain are present, but only a very few are developed to functional maturity, as is shown by the small number of medullary sheaths in the cortex.² They develop, however, with incredible rapidity, first over the areas for vision and then the other sensory-motor areas, and last of all are developed the areas for association. While there is every reason to believe that this increase in medullation and growth of association fibres goes on, progressing from the fundamental to the accessory parts of the organism, till about forty-five years of age,³ yet conclusive evidence for this on the neurological side is still wanting ; for, as Flechsig says, the brain is so fully medullated by the tenth month in all areas that it is impossible with present methods to study the later medullation accurately.

Donaldson,⁴ quoting Seguin, says that the centers for movement of proximal joints are developed before those for the more distal ones, and it is generally accepted by neurologists⁵ that the development does proceed from fundamental to accessory nerves.

This, apparently, must be based upon the fact that the embryo follows this general order in its development, and that the nervous system breaks down again in the reverse order, or from accessory to fundamental, and upon inference from the fact that young children are unable to properly co-ordinate movements requiring the adjustment of small muscles, as Hancock has shown.⁶

It is known that the motor nerves of the spinal cord are

¹ See Chapter X, p. 727, by Donaldson, "American Text Book of Physiology," edited by Howells. The brain makes up 12% of total weight of body at birth and about 2% in adult life.

² Vulpus. See also "Growth of Brain," by H. H. Donaldson, and "Gehirn und Seele," von Dr. Paul Flechsig, Leipsic, 1896.

³ H. H. Donaldson, *Growth of the Brain*, p. 244 ; or Kaes, *Archiv. f. psychiat. u. Nervenkrank.* Bd. XXV, 1894.

⁴ Donaldson, "Growth of the Brain," p. 355. Seguin, "Archives of Medicine," 1879.

⁵ Ross, "The Diseases of the Nervous System," Vol. I, pp. 68-70.

⁶ John A. Hancock. "A preliminary Study of Motor Ability," *PED. SEM.*, III, 1.

better developed than the sensory at birth,¹ and that the child at birth is practically a sensory-motor reflex animal, with only the spinal cord and central gray masses, of the brain, and parts of the cortical areas for the special senses, developed to functional maturity. The development is nothing like complete even here, as Kaiser found over twice as many developed cells in a given area of the cervical enlargement of the cord at fifteen years as was found at birth.² The growth of the peripheral sense discrimination soon puts the infant ahead even of the adult, but the central discrimination increases gradually even through adult life.³

At three years of age the brain is two-thirds the weight of the adult brain, and some cells in all areas are seen to be developed, though not by any means all cells in any area. The gross weight of the brain increases from 372 gmms. at birth to over 1,300, or within 100 gmms. of full mature weight by about the seventh year. From then until about the fifteenth year, when it reaches its maximum weight, the growth is slow; what happens during adolescence and later is not well studied, and one can only say that the number of medullated fibres increases until about forty-five, when they tend to gradually decrease. All this period is probably given to growth of new connecting or association fibres, and the completion of the sheaths of those begun in early life. That this process is partly due to and dependent upon the effect of external stimuli is shown by the excessive number of granules and partially developed cells in the defective areas of Laura Bridgman's brain.⁴

The great work the neurologists must do for pedagogy is to push this research further and ascertain: first, what is the sure sign of functional maturity in a certain brain area, and, secondly, in what order the different areas reach such maturity as to profit most by those external stimuli that seem to be necessary. Then we might cease injuring unripe organs by too early use, and give those that have reached functional maturity the needed stimuli while still in a plastic condition.

*Development Diseases.*⁵ The various periods of development in the structure of the body are marked again by characteristic concomitant diseases, mostly of neurotic origin.

After the formative failures of intra-uterine life, probably

¹ Ambronn and Held, *Hist. Archiv.* 1896, Heft. 3 and 4.

² Kaiser, *Die Functionen der Ganglienzellen des Halsmarkes*, 1891. Donaldson, *Growth of the Brain*, p. 164.

³ Czermak, *Gesammelte Schriften*, Leipsic, 1879. Donaldson, *Growth of the Brain*, p. 344.

⁴ Donaldson, *Growth of the Brain*.

⁵ These lists of diseases of the different periods are taken almost literally from Clouston, *The Neurosis of Development*, specially pp. 11-12.

due to deficient trophic innervation, such as hair-lip, cleft palate, genetous idiocy, etc., and after the severe crisis of birth and readjustment to new mode of life are passed, then comes the very rapid growth of the brain from infancy till seven or eight years of age. This is a period of dentition, of rapid special-sense education, and motor co-ordinations, and speech development, and is liable to be accompanied by convulsions, squint, stammering, night terrors, liability to high temperatures, and delirium at night with temperature 99 to 101°, infantile paralysis, tubercular meningitis, hydrocephalus, rickets, deaf-dumbness, some varieties of idiocy and imbecility, with rare cases of mania and melancholia, and other less frequent diseases. These are all connected with the immense brain growths, and the development of certain brain functions at that time, such as those of speech, muscular co-ordination, equilibration, special-sense organs, etc.

The next period is when muscular motion becomes co-ordinated with emotion, from 7 to 14 years of age. This is a period of very slow growth in brain bulk, but probably rapid medullation of association fibres, though sufficient neurological data on this are yet wanting. Then arise chiefly chorea, some forms of epilepsy, somnambulism, megrim, asthma, myopia, convergent strabismus, etc.

The next period is marked by the onset of reproductive capacity at puberty and its gradual perfection during adolescence, with the trophic, motor, emotional and moral developments accompanying this. The exact neurological changes here, too, are not yet discovered. At this period arise such diseases as certain forms of emotional and irrational willfulness and moral perversion, immorality, impulsiveness, stupidity, eccentricity, hysteria, epilepsy, megrim, Friedrich's disease, and above all adolescent insanity, with occasional dipsomania, frothy religionism, perverted sexual instincts, unfounded aversion to relatives, or to society, some joint diseases, acne, nasal pharyngeal polypi, acute rheumatism, etc.

This period of adolescence is certainly the focal point in life. Here the organism has reached that period where it may perpetuate itself, and the tribunal of nature gives it a severe testing before deciding that it shall pass through this stage. This is the time when the last struggle takes place between the rival qualities in heredity. Here the unsound heredity is most liable to show itself, and again here the sound heredity may fight its final battle, uproot the childish diseases of development and start the organism on the road to healthy life. Key has shown that, of 19,000 children examined, chronic diseases were better resisted at the period of maximum growth than at any

other,¹ and Hartwell has shown that, among Boston school children, fewer deaths occur at this period than any other;² so that the rule is commonly accepted, that the period of maximum growth is the period of maximum power to resist disease. Lancaster³ also has evidence that this is true when the maximum growth comes after puberty, whereas if it comes before that time, many of his cases indicate that it is liable to be accompanied with various nervous, digestive and eye troubles, insomnia or bad dreams.

Puberty arrives in boys at about 16 and about two years earlier in girls.⁴ This is accompanied by the growth of the pubertal hair, and in girls the enlargement of the mammary glands and rapid broadening and erection of the pelvis. There is higher blood pressure in all the arteries, except the pulmonary, which has less. Temperature is also slightly increased.⁵ Lancaster has also found several cases in which striking rapid changes occurred during this period in the features and facial expression, the child changing a stub or straight to a Roman nose, or dropping other features of the mother and taking on those of the father, or *vice versa*. The many cases collected of this are certainly of interest and have led Mr. Lancaster to uphold the theory that here at the completion of brain growth in adolescence there is a second struggle between the paternal and maternal potencies, each striving to fix itself, often resulting in readjustment because of the exhaustion of some potency previously victorious and its consequent displacement by the potency from the other parent—this struggle being the great exciting factor in adolescence. This theory needs more evidence, but is certainly of interest.

Mental Development. Noticeable as are the physical changes during these periods, the mental characteristics are no less distinct, as has been shown in the following investigations.

The first psychic activities are largely instinct-feelings with very vague accompanying ideas. The child does not learn even what his own body is till after two years old, as Sully shows. It was clearly shown in the study of "Dolls"⁶ that young

¹ Burgerstein, Axel Key's Schulhygienische Untersuchungen. Hamburg, 1889.

² E. M. Hartwell, Report of Director of Physical Training. Boston, 1891.

³ E. G. Lancaster, The Psychology and Pedagogy of Adolescence. PED. SEM., V, 1.

⁴ Charles Roberts, "Physical Maturity of Women." Mr. Lancaster finds in 200 cases examined that boys are earlier than this would indicate.

⁵ Dorn Blüth, Gesundheitspflege der Schuljugend, gives a careful account of the physical changes at puberty.

⁶ A. Caswell Ellis, and G. Stanley Hall, "Dolls" PED. SEM., IV, 2.

children fail entirely to distinguish subject and object and, even at seven years of age, may attribute their own feelings and desires to other objects. Their powerful imagination¹ and strong feelings master them so that they do not distinguish clearly between the real and the imaginary, and until they are four or five often do not know that their dreams are not realities. The line between feeling, will, and intellect is hardly distinguishable, as was shown by their utter inability to see in their dolls anything but what they felt or desired about them. This confusion begins to clear up after five or six, but the stronger impulse to attribute to everything else the child's own feelings, or animism, is still present at seven and falls away only slowly till adolescence. The child seems to be as thoroughly animistic as a savage could be in present environment, as practically all the studies of children show. That the child personifies everything and is so imaginative, Sully shows, does not prevent him from having even at the same time a strong, but very fluctuating, power of observation. Correct and full observation, however, is a slow growth. At this period of life children are in an almost hypnotic state of suggestibility, as is shown by Baldwin,² Small³ and others.

Darwin,⁴ Preyer,⁵ Perez,⁶ Sully,⁷ Lombroso,⁸ Compayré⁹ Hall, and Burk, have shown the many animal and savage characteristics of young children, such as their utter selfishness, lack of regard for others' feelings, their teasing and bullying propensities, fears, superstitions, lack of regard for truth, mimicry, lack of correct idea of death, even their sympathy and pity are largely imitations and are well paralleled in animal and savage life.

Miss Sissons¹⁰ noted that of all the spontaneous school yard plays of kindergarten children, the dramatic and representative plays and those having great physical action were predominant. In the tremendous role that imitation plays in children Miss

¹ On imagination, see W. H. Burnham, "Individual Differences in the Imagination of Children." PED. SEM., II, 2. Also, F. Queyrat, *Le Imagination et ses variétés chez l'enfant*.

² Mark Baldwin, *Mental Development in the Child and the Race*.

³ Maurice H. Small, "The Suggestibility of Children." PED. SEM., IV, 2.

⁴ Charles Darwin, *The Expression of the Emotions in Man and Animals*.

⁵ Preyer, *The Infant Mind, and The Mind of the Child*.

⁶ Perez, *The First Three Years of Childhood*.

⁷ Sully, *Studies of Childhood*.

⁸ Lombroso, *L'Homme Criminel*. "Criminal Instincts are general in children."

⁹ Compayré, "L' Evolution de L' Enfant."

¹⁰ Genevra Sissons "Children's Plays." *Studies in Ed.*, p. 172.

Frear¹ noted that they loved specially to imitate adult activities rather than adult words.

The colors preferred by young children are the strong ones, and the more violent contrasts are the most pleasing. They show little, if any, appreciation of real art, preferring decidedly the common colored reproductions to the most artistic black and white originals.²

The productive art instinct awakens very early, and recent study shows it to be, as Froebel said, a continuation of gesture. After the early scribble stage it passes very soon into the symbolic and representative stages; children showing more interest in the art production than appreciation for art till about the eighth year, when Lukens³ finds much evidence that the interest in the study of art or observation of artistic production forges ahead and the early interest in production is lost. This falling off of interest in production may be permanent, but if not, it remains far below the interest in observation and appreciation of artistic productions till well into the period of adolescence.

The child's interest in causality⁴ is awakened very early, being present in all children examined before three years of age, the boys being more precocious and persistent than the girls. Their questions of "why" are most frequently about natural phenomena, motion, animals, and religious subjects. Practically all children show a religious interest before seven years of age.

Binet, Barnes and Shaw found that almost the only interest which young children have for objects is in their use and action, with little or no interest in their substance or qualities. After this period they gradually get interested more in the activity and motion, and then in what it is made of. Barnes found that interest in classification is very small till seven, rises slowly till ten and rapidly then till it reaches adult proportions by fifteen years.⁵

Sully, Mrs. Barnes, Brown,⁶ in fact, all students of children,

¹ Caroline Frear, "Imitation, A Study Based on E. H. Russel's Child Observations." *PED. SEM.*, IV, 3.

² M. V. O'Shea, "Interests in Childhood." *Child Study Monthly*, Oct. 1896. Baldwin found blue to be the favorite color, but his method was faulty. Most observers give yellow as the earliest favorite.

³ See foot note 5, p. 185; also M. V. O'Shea in *Proc. N. E. A.*, 1894, p. 1015.

⁴ See Sully, also Anna L. Davis, "On Children's Interest in the Causal Idea." *Child Study Monthly*, Sept., 1896.

⁵ Alfred Binet, "Perception d'enfant." *Revue Philosophique*, 1890. Earl Barnes, "A Study of Children's Interests." *Studies in Ed.* p. 203, ff. Edward R. Shaw, "A Comparative Study on Children's Interests." *Child Study Monthly*, 1896.

⁶ Elmer E. Brown, "The Child's Interest in Historical Biography and Narrative." *Journal of Ed.*, Feb. 7, 1895.

agree that the preponderating literary interest of young children is in fairy and folk-lore stories, which lasts with at least half the children till ten years of age, when it rapidly declines almost to extinction by the thirteenth year, with a possible rejuvenation later from another standpoint. Miss Vostrovsky,¹ in a special study, found love lore not mentioned till the tenth year, and at this same period the children suddenly grow critical and lose interest in the fairy stories. Brown found that for California children legendary heroes, pioneers, and heroes in history, awakened little interest till the eleventh or twelfth year, when they were the predominating interest. In a study of favorite books of children at various ages Mr. John C. Shaw found the following to be the five most generally liked, given in order of preference: 3d grade, Grimm's Fairy Tales, Alice in Wonderland, Black Beauty, Andersen's Fairy Tales, Five Little Peppers; 7th grade, Scottish Chiefs, Rose in Bloom, With Clive in India, Six Girls, Huckleberry Finn; 2d yr. High School, Donovan, Ramona, Scarlet Letter, Prince of India, Rob Roy. Lancaster² found in his study of adolescence the following authors preferred at that period, given in order of preference: Poets—Longfellow, Tennyson, Whittier, Shakespere, Holmes, Bryant, Mrs. Browning; Novelists—Scott, Dickens, Alcott, Eliot, Hawthorne, Roe, Stowe, Cooper. Both these studies are too limited for scientific generalization, and the spontaneity of the reports of the children is interfered with because certain of these works are taught now in so many schools; but taken with other works in child-study their import is plain.

Of stories interesting to young children, Miss Vostrovsky found them most interested in the early period in the action and the names, while feelings, sentiments, æsthetic details and moral distinctions fill a small place. Stories with the particular human interests were preferred and specially those about children.³ Miss Holbrook reached similar results, through study of things read by children.⁴ In this the decided presence of the feeling

¹ Clara Vostrovsky, "A Study of Children's Superstitions." *Studies in Ed.*, p. 123, ff.

² E. G. Lancaster, *The Psychology and Pedagogy of Adolescence*. PED. SEM., V, 1.

³ Clara Vostrovsky, "A Study of Children's Own Stories." *Studies in Ed.*, p. 15, ff.

⁴ Agnes Sinclair Holbrook, "Study in Reminiscence." *Studies in Ed.* p. 58, ff. Pathos with a gladness of relief were the emotions mentioned most often. Evening appeared the most impressionable time, often with the open crackling fire and silence at the time mentioned. Colored illustrations also were conspicuous in memory. The animal Bible stories such as Jonah and Daniel were favorites. Almost no reading-book stories were mentioned. Book titles and persons' names were among the most prominent things remembered.

or emotional element is noticed, which certainly is more in accord with the writer's general observation than Miss Vostrovsky's result indicating that feelings played a small part with young children.

In study of historical interest, Mrs. Barnes,¹ and, in an independent study, Miss Köhler² found that it first centered around strong lines of action, a clear presentation of names and places and the relations of cause and effect, and a desire for a truthful record. The last was, however, entirely uncritical, the personal authority of the teacher being all that was desired. Little care was given to the time, the ethical element or expansion of detail. The early interest was largely personal, centering in families and heroes. The larger social interest was not found till the twelfth year, when it rose very rapidly and along with it a strong critical spirit and interest, which till then is lacking. The change to interest in social life and in the search of sources for truth is as decided here at puberty as we will see later it is in religious development.

The power to draw inference, while not found entirely absent at any period examined, was very slowly developed and still weak till the twelfth or thirteenth year when it developed strongly into legitimate and imaginative inference.

Street reports experiments which indicate that children acquire a foreign language more rapidly from eight to twelve than at any other period of life.³ Shaw found that of 700 Worcester school children examined, the memory reached its maximum very early, boys by the ninth and girls by the seventh year of the grammar school.⁴

A compilation of the works of Hall,⁵ Barnes,⁶ Sully, Burnham,⁷ Daniels,⁸ Ellis,⁹ Starbuck,¹⁰ and others, indicates that in theological matters children below six usually accept everything told them without question, only translating all of our adult explanations into terms of their own little experience. The spirit world being another home and playground above the

¹ Mary Sheldon Barnes, "The Historic Sense Among Children." *Studies in Ed.*, p. 43, ff.

² Anna Köhler. "Studies in Historical Methods," by M. S. Barnes. Boston, 1896, p. 81.

³ J. C. Street, "A Study in Language Teaching." *PED. SEM.*, IV, 3.

⁴ John C. Shaw, "Memory in School Children." *PED. SEM.*, IV, 1.

⁵ G. Stanley Hall, "The Contents of Children's Minds." *PED. SEM.*, I, 2. Also reprint in book form by E. L. Kellogg & Co., New York.

⁶ Earl Barnes, "Sex in Education," and "The Theological Life of a California Child." *PED. SEM.*, II.

⁷ W. H. Burnham, "A Study of Adolescence." *PED. SEM.*, I, 2.

⁸ A. H. Daniels, "The New Life." *Am. Jour. of Psychology*, VI, 1.

⁹ A. Caswell Ellis, "The Sunday School." *PED. SEM.*, III, 3.

¹⁰ Edwin D. Starbuck, "A Study of Conversion." *Am. Jour. of Psychology*, VIII, 2.

sky with dollies and pets. Very few and vague questions arise from seven till ten when they begin to criticise and question. This increases now rapidly, reaching its maximum intensity at about fourteen, and declining slowly from that time. The period of adolescence is, however, the period of the greatest religious interest, and the strongest theological convictions are felt from about twelve to fourteen or sixteen. After this, doubts assail strongly and the youths struggle in attempt to harmonize science and religion.

Closely connected with the religious development is that from selfishness to altruism. Young children are all by nature almost completely selfish; from six to twelve a few are unselfish, while all normally improve; but adolescence is marked by a remarkable awakening of unselfishness, a rise of philanthropic ambitions and general social and altruistic impulses,¹ girls leading boys at all ages, except probably at about thirteen.² These natural altruistic and social instincts may, however, be completely inverted and adolescence develop an intense selfishness, a morbid hatred of all society, or a great love of bullying and teasing, which is quite common also in a much younger age, as Burk shows.³ Dawson⁴ finds that most criminals in American schools and prisons are found to have begun their career before twenty years of age, and that a large per cent. of the children in the reform schools, very many of whom are adolescents, are sent there on account of stubbornness, or refusal to submit to the usual controlling authority.

Barnes,⁵ Miss Darrah,⁶ Miss Schallenberger,⁷ Miss Frear,⁸ Snedden,⁹ all approaching the subject in different ways with varying experiments found that children under six or seven have little, if any, appreciation of general laws, but consider personal commands binding, and regard punishment as an arbitrary, individual matter imposed without reference to the social order. They do not themselves discriminate degrees of offences, but

¹ Alma Patterson, "Children's Motives." *Studies in Ed.*, p. 252, ff. "Children's Hopes," *Rep. State Supt. of Pub. Inst.*, N. Y., 1896, p. 1007-8. In this study only three or four out of 2,000 mentioned religious hopes till twelve; the consideration of death was not seen either till twelve.

² Hattie Mason Willard, "Children's Ambitions." *Studies in Ed.*, p. 243, ff.

³ Frederick L. Burk, "Teasing and Bullying." *PED. SEM.*, IV, 3.

⁴ Geo. E. Dawson, an unpublished manuscript.

⁵ Earl Barnes, "Discipline." *Studies in Ed.*, p. 366, and other places.

⁶ Estelle M. Darrah, "Children's Attitude toward Law." *Studies in Ed.*, p. 213 and 254.

⁷ Margaret E. Schallenberger. *PED. SEM.*, III, 1.

⁸ Caroline Frear, "Class Punishment." *Studies in Ed.*, p. 332.

⁹ David S. Snedden, "Children's Attitude toward Punishment for Weak Time Sense." *Studies in Ed.*, p. 344.

punish arbitrarily and severely, more with a vindictive notion of "getting even" than with any moral purpose. Street¹ reports that, of two hundred persons studied by him, moral action with younger children seemed more a matter of imitation, and that conscience plays a very small role till after nine years of age and little then till about thirteen. Young children have vague notions or feelings of outrage, or of satisfaction, without knowing exactly why. They submit to arbitrary punishment more willingly now, but less and less so as age advances. Sully says that young children object to all law as implying a restraint on free action. This condition grows more rational very slowly till about the eleventh year, when a great increase in regard for law springs up and develops rapidly, till at sixteen (the highest age studied) seventy-five per cent. of all recognized well its binding force. The child begins now to know what he feels, to recognize the social order, to appreciate the purpose and remedial value of punishment, to punish less severely and more rationally, taking into account somewhat the intentions of the culprit.

Though very indefinitely and incompletely, something of the same order of development was noticed in examining the reports of punishments of dolls by children at different ages.

Clouston, Burnham, Lancaster, all those who have studied adolescence impress upon us the revolutionary character of this period. Here the social and ethical impulses spring to the front.² As at the first physical birth the lower animal feelings and instincts, and the special senses are born and develop rapidly to maturity, so at the second birth of adolescence the nobler social and religious feelings, the higher critical and rational faculties are born into the human soul. At this period the emotional activity is intense, often to a morbid despondency or unreasoning joy. The love of nature is strong — not a scientific love of it, but for the quiet, solitary communings. This arises apparently from an intense desire for sympathy. For the same reason, apparently, boys at this period so often love women very much older than themselves. They seem to feel a broader life stirring within them and to grope around in all directions to satisfy this yearning. Lancaster reports that this is a period of interest in music and art, with a strong tendency to philosophize. Impulses spring up here in all directions, expressing themselves now in intense love of the opposite sex, now in fierce religious fervor, or in desires or attempts to do great things, to straighten out or right the order of the universe, to do great acts

¹ J. R. Street, "A Study in Moral Education" PED. SEM., V, 1.

² See also "Children's Hopes," by Taylor, Rep. State Supt. of Pub. Inst., N. Y., 1896, p. 1006, ff.

of heroism, or deeds of philanthropy. There seems to be nothing beyond the reach of the wild surging of an adolescent's brain, and future life never rises higher than the level here attained. In this period are glimpsed all the great ideals which direct the whole life, and adult life might be termed the period for picking out and developing some one or more of the vague ideals, aspirations, hopes, of adolescence.

After looking at these facts indicating the several radically differing phases of human development, one must see that any system of pedagogy that does not make the child's development the fundamental fact in the determination of culture material and method of procedure in education cannot hope to escape trampling upon or starving the most precious buds of the developing human being.

The human soul is seen to be too complex, possess too many differing phases of development to be met at all periods of life by any present form or method or system of education.

To be sure, no hard and fast lines, or particular ages of life mark off these periods, and certainly the experiments thus far made are crude in the extreme and often thoroughly unsatisfactory; but all of them together do make it safe for us to say, roughly, even in this, the infancy of child study, that these periods are passed through in this order and with these changes. That far greater clearness and deeper insight will be gained by the combined work of the next few years is a safe and reasonable hope. Child-study is in the period of search for proper methods of working; the data already on hand have cleared the way enough to show what are some of its problems and what sort of questions we must ask nature in our experiments. To get such questions clearly outlined has ever been the first *desideratum* for an advance in science.

Meaning of these Periods. What these periods of development mean for education is a problem that philosophy has forced upon it now as never before.

The greatest problem of all presented by these periods is the relation in the unconscious between these successive stages of development. In the intra-uterine period the embryo is, so far as we can say, entirely unconscious, and the special sense organs and cortical areas do not function at all; yet such a force is generated, or gathered up, in this period that in a few days after birth this whole system comes into function. That all the forces necessary for the rapid development of the first months of life should be generated after birth is incredible. It is well known, too, that malnutrition, improper stimulation, shock during gestation, or accidents at delivery, may any of them produce most profound effects upon the sense life to be developed in the first few years after birth.

Just so, in that second period of childhood, from seven to eleven, the body growth has stopped, the brain growth is nearly at a standstill, and the higher emotional, altruistic and critically rational life has scarcely begun to function—the few scattered cases of apparent function being hardly more than comparable to the reflex or imitative intra-uterine reactions of the embryo ; yet a burst of physical energy and flood of new emotional and intellectual activity show themselves in such rapidity at puberty that the space of one year may transform the whole mental and physical organism. The question is forced upon us then, where does all this force come from, which so suddenly and powerfully surges up at puberty? Can it all be generated during this brief period, or has the organism been gradually accumulating it during all that long period of retarded growth? Do not the forces which break forth at adolescence in new physical functions and higher emotional activity slowly and unconsciously gather during that period of dead-level from seven till eleven, just as the forces for the growth of consciousness and special senses gather during the intra-uterine period? Is there any particular causal relation between the activities of the senses and muscles from seven till eleven and the later higher psychic activities? In what form are those forces that are to come forth later stored away in this period? Under what embryonic forms are the rudiments to appear now that will stimulate the later deep emotion and broad reason? Are the abstractions of later life first developed in the form of symbols, as Froebel believed, and must the child first possess this symbolic form and feed his soul on that to develop this unconscious potentiality for abstract thought up to consciousness at adolescence? Anthropology shows that symbols have played a vast role in the growth of thought in the human race. Froebel's mathematical symbolism certainly seems, however, to have few facts in psychology or anthropology to sustain it; but may there not be a larger and broader symbolism of nature that plays a part in education we little dream of as yet. The psychic powers cannot spring forth full developed from nothing into consciousness. All nature tells us that there must be some preceding, intermediate state out of which they grow.

Education has got to get back of clear consciousness into rudimentary and germinal forms to find what they are and how they are fostered. The feelings, the instincts are the great reservoir from which all ultimately comes, and if we ever intend to be more than mere conjurors and parlor magic workers we must go into this laboratory of soul and see how nature prepares those highly organized compounds of consciousness that are thus at certain seasons thrown out in overwhelming confusion. Until that is done education is a gross empiricism and at best

largely guess work. The study of adolescence has received some careful attention, and though much is left to learn, we do know something of its chief features. Of that period from seven till eleven practically nothing is known. This is now one of the greatest needs in pedagogical psychology. It is impossible to get the full meaning of the earlier period or to understand adolescence till we know what the one results in and what produces the other. If analogy is of any value for prophecy, it will probably be found that the rudimentary form of the adolescent psychoses are not similar at all in form to the developed product. To apply this concretely, that forcing upon young children broken doses of love lore and society of the opposite sex will not at all hasten the development of a healthy adolescent love ; or, that certain juvenile courses in nature-study may even delay or abort the adolescent love, sympathy and feeling of union with nature—and so with religion, science, etc. This whole matter bids fair now to turn out to be a food problem. Take, for instance, the catechism in early religious training. Is not the use of that somewhat as it would be if one discovered that the body was made of oxygen, hydrogen, nitrogen, etc., in certain proportions and amounts, and then took exactly those same proportions and amounts of pure oxygen, hydrogen, etc., and fed them raw to the child? All things now point in pedagogy to the fact that we must take more fully into consideration the digestive and transforming power of the receiving mind. We know what is given to the child, as yet we don't know what he transforms it into before thorough mental digestion takes place. So far as consciousness is concerned, we can see no possible connection between the mental stimuli given the child in the intra-uterine period and those powers that he possesses just after birth. He has been simply taking nourishment through the umbilical cord, and upon this process depends the ripening of those powers of sense. The puppy confined in perfect darkness, away from every sight stimulation, and kept well fed, had his eyes to open and sight to come at the proper time.¹ What now are the rudimentary stages of the special senses in intra-uterine existence, and what stimulation do they need? No one would say that their development would be helped and not greatly endangered at this period by the sense stimulation of later post natal life. There seems to exist a sort of food relation here that is not well understood. So with the activity of that period just before adolescence, it seems probable that the relation which it will sustain to adolescence is this same food relation. It will be seen that it is not at all

¹ H. Held, "Ueber Experimentelle Reifung des Nervenmarkes." Archiv. of Anat. u. Entwicklungsgeschichte. Leipsic, 1896. p. 222.

the plan of nature to prepare the way for the later activity by giving a simple form or broken dose of this activity for a long previous period, but by feeding the organism on such food as it demands and has organs to receive at this particular stage of its development — preparing for the sense activity by feeding the physical embryo on blood, preparing for the higher emotions and co-ordinations of thought of adolescence, by feeding the child upon the somewhat animal emotions and sensuous and muscular activities of the earlier period of natural youth.

If this is what Froebel meant in saying that the full and complete development of one period is the best possible preparation for the succeeding period, then he took his position like a biologist and philosopher, but he applied it like a mystic.

In the present condition of psychology such problems are open to us as they never were before, but much work is yet to be done before any but a speculative answer can be given.

Period from Seven to Eleven. Concerning that enigmatical period of retarded development from about seven till eleven one fact does seem to be quite certain; that is, that it is the period for language teaching. By referring to the diseases of the former period it will be seen that the speech organs have just completed their growth and hence are still somewhat plastic, though ready for work. It is also shown that during this period the verbal memory is good, reaching maximum power about its end, while children now are particularly interested in names. The higher emotional and co-ordinative power and interests of adolescence are not needed to learn words, declensions, and conjugations; so that it is but natural that this should be found, as it has been, the period of greatest facility in learning a foreign language. That intensive study of language should come here seems certain.

That this is also the period for the co-ordination of the muscular movements is a patent fact of physiology. The intense interest in plays¹ and the irrepressible movements, the lack of ability to long concentrate attention on intellectual work, their love of manual exercises² all indicate that in this period should

¹ Mr. T. R. Crosswell finds in a study he is making, including about 5,000 children, that 8 to 13 are years of great interest in the traditional games, such as tag, ball, etc.,—ten and eleven being the years of greatest interest. The same is true of the running games, while the love of toys and imitative games comes earlier, and that of such games as cards comes later.

² J. P. Taylor ("Children's Hopes," Rep. State Supt. Pub. Inst. N. Y., 1896, p. 1000.) found that of 2,000 children examined the trades were most popular at 7, 8, and 9. "The fact that an occupation deals with tools, plants, or animals, that it means peculiar power over one's fellows, that it gives one a distinguished air and requires something of heroism makes it appeal most strongly to the younger boys."

be begun those manual and artistic studies that require peculiar or delicate muscular co-ordination later in life.

The Early Period. What should be done in that first period of rapid growth is doubtful. Here the senses are to be trained, surely; but whether otherwise the period should not be left to digestion and growth, by following almost any line of spontaneous interest is an open question. The adult teachers are so far removed from the condition of mind of this period that they cannot appreciate it, as they may the later periods, by means of their own reminiscences; and so little is really known of the child's capacities and needs at this time that any *rigid, adult-devised* system from present data seems as liable to harm as to help the child. The safest hope appears to be to trust nature and let children follow largely their own interests, but when we consider their almost hypnotic state of suggestibility it will be seen that this is well-nigh impossible unless the adult exercises considerable care in getting out of the child's way. The further discussion of this is not in place here, nor a very satisfactory settlement on scientific grounds possible from present data. What could be said was given in discussing Froebel.

Adolescence. At the great psychic new birth at adolescence it cannot be doubted that the new forces set free must have fit material to which to apply themselves, lest they become attached to what is unworthy — here the boy should have something better than partial payments and Latin roots; he should study into such larger views of life, and nature and religion as are shown in biology, sociology, history, science, literature, etc. Street¹ found from ten to fifteen to be the period when most children studied by him noted the great influence of a companion or teacher in shaping their moral character.

The intense energy and activity of adolescence demand many and large interests, and if education fails to satisfy these, the force expends itself in dangerous or morbid channels. How this energy is conserved and what interests are established here will determine the future life.

"Core" of Study. Many other minor points are to be gathered from what data are already collected, but these are only a beginning of what the next few years should furnish. The supreme importance of these periods, and their controlling influence in any rational course of study, can no longer be doubted. From this point of view all notions of the Herbartians about a "core" or "cores" of studies must be transformed. The "core" of study must shift with the varying cores of interest and capacity, as they arise in different stages of the natural order of psychic development. There should be no more danger

¹ J. R. Street, "Moral Education." PED. SEM., V, 1.

to mental unity and sanity in this than there is to bodily unity in the developing of some senses and organs years before others. The laws of organic growth are far too subtle to be included within mathematical psychology.

Nascent Periods. These facts prepare the way now for a discussion of the "nascent periods" of psychic development. The chemist knows that just at the point of being set free from its old combination an element may take up more of another given element than it ever can afterward; nascent oxygen, for instance, can take more hydrogen than can ordinary pure oxygen. In physical growth the period of greatest growth in function is birth. All the organs for breathing, eating and extra-uterine life are present for some time before, but suddenly they begin an activity that is tremendous as compared with their previous condition. Food and air now are all important, never again will such large returns result from such small outlay of nutriment. Slight starvation now may mean death. Small neglect or maltreatment now are more serious than they are ever afterwards. Similarly, at the nascent period of puberty proper or improper treatment of the organs then developing has its most powerful effect for good or evil.

In the cultivation of psychic powers, the same importance seems to be attached to their nascent period. If the special senses are not trained in childhood it is impossible to acquire the highest skill later. The emotional and æsthetic faculties must be developed before the passing of adolescence or they never reach perfection. Lancaster¹ found the average age at which great actors, poets and artists did their first famous work was below nineteen, while the great musicians have become noted before ten years of age, pioneers by eighteen and missionaries before twenty-three. The physical and manual training teachers generally claim that it is impossible to ever after gain perfection as wood carvers, gymnasts, etc., if the period of early muscle and nerve growth and co-ordination before and during early adolescence is neglected. There seems to attach a certain plasticity and also a momentum to early stages of any growth that offer opportunity to the educator such as no other period does. Little work of value has yet been done to see, either when these nascent mental periods for different culture subjects are on, or to indicate by what the educator may be guided in attempting to seize all these at the period of maximum capacity for growth.

The safest and only guide now offered is the child's own in-

¹ Dr. Lancaster studied the lives of 100 noted actors, 50 poets, 50 artists, 100 musicians, 100 pioneers, and 50 missionaries. See note 3, p. 171.

terest. Interest is nature's declaration that here is something which fills a want felt in the organism. A few random questions or hysterical kind of enthusiasm, due generally to suggestion or imitation in following a teacher in class, do not indicate anything of the kind or any real interest. And when intelligent men speak of following interests as if opposed to work and to doing all unpleasant tasks, and as if it meant vibrating with every flitting fancy of the child brain, they really appear not to understand what "following interests" means. It is a physical and mental impossibility to follow all interests; but it flies in the face of nature and tramples science under foot to attempt to teach anything for which the child has then no interest. It will be seen under the discussion of "rudimentary organs" that many interests of the child need as careful weeding out as others do fostering; but interest must mean some degree of physical and apperceptive ripeness for the given subject, for how can one be interested in what he knows nothing about. Physiology shows that interest means a quicker pulse and full blood supply to the whole central system.¹ Hodge's work on fatigue shows that no amount of external uninteresting stimulation can tear the nerve cells down with activity as will the normal interests of the daily work of those animals in gathering food.² Psychology and child-study have yet much to furnish pedagogy in pointing out the normal interests of each period of life, and the proper method of developing them without causing stagnation from too early satiety on the one hand, or, on the other hand, losing the precious moment of maximum capacity for growth by an early starvation. Herbart first showed the real value of a many-sided interest, but it is left for modern pedagogy to find what these interests are and when and how they develop. His idea of grafting them on, and his "formal steps" by which to develop them, do not cover what the study of heredity, instinct and feeling have shown since, and it seems probable now that even these much loved and more abused "steps," will have to give way, or at least give over many passengers to other more instinctive, less conscious and less logical means of entrance into the mind. Just what these new steps, or what the apparent variety of steps are, is yet too subtle a problem for present data.

Periods of Arrest. Connected probably closely with the inevitable rhythm of the ebb and flow of interest, and just the obverse side, or compliment, of the nascent periods are the periods of decided decrease in rate of progress, or total standstill

¹ H. H. Donaldson, *The Growth of the Brain*, p. 356.

² C. F. Hodge, "A Microscopical Study of Changes Due to Functional Activity in Nerve Cells." (Boston, 1892), *Journal of Morphology*, Vol. VII, No. 2.

in the process of mastery of any subject. This common experience all have had of beginning some new subject, such as a new language, or athletic exercise and making very rapid progress for a while and then ceasing to improve further, no matter how hard one tries, till a rest is taken or some extra stimulus spurs us to an unusual exertion, when the progress begins again as suddenly as it ceased and rapid improvement is made for another period. Only recently has this matter been studied experimentally, and yet only slightly. Physiological rhythms have been found in practically all physical functions,¹ and the parallelism usually found between bodily and mental phenomena should long ago have set education to work on this problem. Brooks² shows that in the segmentation of eggs the progress is not at all even, but consists of periods of apparent rest followed by periods of great activity. Donaldson³ says of the brain that growth is never general, but accentuated, now at one spot, now at another. All of this gives increased significance to the work of Bryan and Harter,⁴ which showed that in learning both to send and to receive the telegraphic symbols the rate of progress went by jerks, and with each student there was a long period of lessened rate of improvement, or no improvement at all, between the rapid rise of the first few weeks of practice and the final rise that gave sufficient facility to do "main line" work. The continuation of the usual exercise per day failed to cause any improvement in work during this rather constant period of no advance till, from no apparent reason, the progress began again; or in some cases the subjects staid at the first period of no improvement for years, seeming to be unable to advance to the required rate for "main line" work, but under extra pressure from the stimulus of threatened loss of job would make an unusual effort and begin at once to improve, when a period of rapid progress followed till a maximum was reached much above "main line" rate.

In writing and drawing and learning to speak, Lukens⁵ has

¹ Michael Foster, *Physiology*.

² W. K. Brooks, *Studies in Biological Laboratory*, Johns Hopkins University, Vol. II, 1882.

³ H. H. Donaldson, *the Growth of the Brain*, p. 357.

⁴ William L. Bryan, and Noble Harter, "Studies in the Telegraphic Language." *Psychological Review*, January, 1897.

⁵ H. T. Lukens, *PED. SEM.*, Oct., '96, and May, '96. Dr. Lukens has since consulted such experienced teachers as Prof. Miller, of Penn. Mus. and Sch. of Ind. Arts, Supt. Daniels, of Chicopee, Mass., Miss Stoker, of St. Paul, Miss Locke, of Chicago, all of whom have noticed the very striking periodicity mentioned in learning drawing; while a number of professional penmen consulted stated that there was a critical period for practice in penmanship about the time of the outcrop of individuality in writing. The writer is indebted to Dr. Lukens for suggestions, both in his lectures at Clark and in a private letter on this subject.

found similar fluctuations. Clark¹ and Barnes² give the same report for drawing. Starbuck³ finds such a periodicity in ethical development; Phillips⁴ is finding evidence for the same thing in the study of arithmetic; Street⁵ in language and in moral culture. Whether this phenomenon is due to a normal and inevitable fluctuation in interest and consequent power of attention and effort, caused by the natural rise of other differing interests; or it is based upon some neurological considerations, such as a need of time for the new association fibres stimulated by the new study to get their sheaths fully developed, and the large number of new co-ordinations to get worked over together until they become largely reflex and leave consciousness unburdened longer with them to follow on after new co-ordinations, these are questions of immense significance for pedagogy. A comparison of this with the study of the phenomena of "second breath,"⁶ and of conversion,⁷ would seem to make it sure that it is short, intense effort which does the great work in education.

Bryan says, however, that unless the normal effort has been kept up faithfully during the long period of no improvement the final period of intense effort will not cause the decided rise in facility in learning telegraphy. This is of great importance, if true, and greater importance if untrue. The writer does not think that control experiments were used sufficiently to give this part of the work proper scientific value. Personal experience in many forms of athletics, and somewhat extended, though unscientific observation, also, lead the writer to believe that in that period of pause in improvement intense and persistent effort is a waste; and that comparative rest, or direction of attention to another exercise, with only enough of the usual work being done to prevent getting out of practice, will give the same result of rapid improvement upon the application of the intense effort again at near the end of the natural period of inability to improve. If scientific experiments prove this true, it is of the greatest importance in the arrangement of the school curriculum. It is a problem that needs and will probably soon have further conclusive study.

These and other facts suggesting the superior power of intense, concentrated, persistent effort over a limited period of

¹ John S. Clark, Ed. Review, (N. Y.) Jan'y, '97.

² Earl Barnes, Studies in Ed.

³ Edwin D. Starbuck, "A Study of Conversion." *American Journal of Psychology*, VIII, 2, and later studies yet unpublished.

⁴ D. E. Phillips, *Am. Jour. of Psychology*, VIII, 4.

⁵ J. R. Street, PED. SEM. V, 1.

⁶ G. E. Partridge, "Second Breath." PED. SEM., IV, 3.

⁷ Jas. H. Leuba, A Study in the Psychology of Religious Phenomena. *Am. Jour. of Psychology*, VII, 3. Edwin D. Starbuck, "A Study in Conversion." *Am. Jour. of Psychology*, VIII, 2.

time, and the work of Bergström¹ and Münsterburg showing the mental waste from interference of associations must soon make the present school curriculum and programme, consisting of a bewildering number of small, scrappy lessons in various subjects piled together each day, yield to periods of more concentrated and intensive study at one time of only a few related subjects.

Rudimentary Organs. As has now been seen on the one hand, that there are in man natural upward tendencies and capacities, which have their own law of development, and each its own peculiar period for coming into life, which should determine the school method and curriculum; so, too, it can be well shown that many downward tendencies crop out in man that are the hereditary legacy left to the organism by the long ages of primitive or animal ancestry. The appearance during the process of growth in a higher organism of physical or psychic characteristics belonging to a lower form in the line of evolutionary development is a common phenomenon, lately much discussed under the term "rudimentary organs." Comparative anatomy and embryology have long ago brought to light these rudimentary organs, belonging really to past ages but brought down in our present bodies, though of no apparent use, such as the semi-lunar fold at the internal angle of the eye, representing the third eyelid of the marsupials; the useless and often troublesome vermiform appendix, representing an enormous organ in the herbivora, "and in the koala attains a length three times that of the body;" the useless ear muscles; the pineal gland, now of unknown use, the remnant of a prominent body in the brain of lower animals, probably once a central, superior eye; the pituitary body, certainly rudimentary and probably representing the primitive mouth or a primitive sense organ of the ancestors of the vertebrata. In man there are now discovered many dozens of these rudimentary organs still present in the adult body; while in its various phases of growth the embryo presents a much larger number of ancestral traces, which pass away or are transformed before adult life is reached.² Thus the human embryo has, among other forms, that of the young of the fish with primitive gill slits, ventral yolk sac, etc., later passing into forms indistinguishable from the young of the lower vertebrates, and finally taking on distinctly human characteristics. The foetus presenting a rudimentary tail, rudi-

¹ John A. Bergström, "Experiments upon Physiological Memory by Means of the Interference of Association." *Am. Jour. of Psychology*, Vol. V, p. 356 ff.

² For fuller account of these rudimentary organs consult Wiesersheim, *The Structure of Man*; Ernst Haeckel, *Anthropogenie*; Paul Topinard, *Éléments d'Anthropologie Générale*.

mentary cervical and lumbar ribs and many other traces of distinctly lower types. Even at the fifth month it is covered with a coat of hair similar to the simian species. The incredible persistence of these ancestral tendencies can be seen when one recalls, for instance, that the process of elimination of the cervical and lumbar ribs began as low in the scale of development as the reptiles and fishes, a time too remote to be accurately estimated in years.

On the psychic side, the simple mental life of animals presents many interesting cases of remote inheritance of once useful but now useless traits, such as the enmity between cats and dogs (little kittens "spit" at the odor of a dog even before their eyes open)¹; the new born calf's fear of dogs; the habit of horses and dogs of turning around several times before lying down, even when on a smooth floor; the lapsing of many domesticated animals into a state of feral fierceness while eating, or during periods of sexual excitement; the covering of excreta by various animals, once probably a necessary means of protection against pursuit; the pawing of horses for food, probably inherited from the time when their ancestors had to paw away leaves or snow to find food; the return of the eels from the rivers to their old home in the sea when they are about to breed, and the similar return of salmon from the sea to their original river home during spawning season; the general tendency of both domesticated animals and of man to lapse to the wild condition when away from civilization. In adult man vagrant, predatory, and many other primitive instincts assert themselves continually even under the restrictions of civilization. It is in childhood, however, that the forces of heredity naturally assert themselves most strongly and present the animal and savage appetites and ideas common to children. Hall's work on the "Contents of Children's Minds," many of Barnes' papers mentioned previously, the work of Ellis and Hall on dolls, Sully's studies, Compayre's and Lombroso's books, and more recently Dawson's work on "Youthful Degeneracy," Burk's on "Teasing and Bullying" and specially Hall's work on fears,² show that the child's early psychic life is so filled with these rudimentary and reversionary types of activity that no theory save distant heredity can explain their presence. Whether this theory explains all these phenomena satisfactorily or not it is beyond the limits of this paper to discuss. This much appears certain; there are these rudimentary organs brought down in the body through incredible ages and there is

¹ Wesley Mills. Proc. and Trans. of the Roy. Soc. of Canada. Meeting of May, 1895, Sec. IV, p. 192.

² G. Stanley Hall, "A Study of Fears." *Am. Jour. Psychology*, VIII, 2.

no reason for denying to psychic characteristics a similar capacity for transmission, while, if we do not do this, the barbarous hectoring and bullying of children, their unnatural appetites and their senseless fears of feathers, insects, fur, etc., cannot be explained at all. That these rudimentary psychic organs, along with the rudimentary physical ones, are present can now hardly be denied. The questions for us as teachers are: first, what are the characteristics of the rudimentary activities; and second, how are they to be treated? The theologians and the school-men have said emphatically, "crush them upon first sight"—prune, lop off, trim down to adult standard has been the cry. But nature gives no evidence of dealing in this way with the body, and biology demands by what right we shall prune the soul. All improvement and growth in complexity of the body has been attained in evolution without the violent lopping off of a single cell. There the primitive organ was always transformed in form or function by slow growth, or was reabsorbed by the body and thus furnished an impetus to the new organ. The great and delicate organ of speech, the tongue, is simply a transformation and development of what was originally an organ of alimentation, the mammary glands are transformed sebaceous glands; the primitive *stratum corneum* is transformed into the shell of the terrapin, the scales of the fish, and later into the hair, nails and hoofs of the higher vertebrate, and finally into the hair and nails of man—passing during the growth of the human embryo of the present day through modified forms of these stages. Prehensile organs, such as the hands in man and mandibles for mastication in the orthopods are transformed organs of locomotion. On the other hand, the legs of the frog are dependent, first, upon the development and then the reabsorption of the tadpole's tail,—any injury to the development of the rudimentary tail delays or weakens the future legs or kills the animal. Biology furnishes numbers of these cases, showing the dependence of the adult form upon the proper development, and transformation or absorption of the earlier rudimentary forms.

In looking at the psychic development of man something similar is seen; the primitive sex instincts and psychoses have been partly transformed and given rise to the domestic and family relations, to gallantry, and often altruism; the savage fright and terror developed gradually into reasonable caution, modesty, awe, reverence; the violent anger of children at people develops later into moral indignation at injustice—and so it is with other forms.

In the light of these biological facts and of the present evidence in child-study it must soon be recognized that this lopping off process in education is robbery and murder—tearing



away the natural raw material of the soul which it is the educator's duty to transform, or to give these rudimentary psychic organs such a development that they will reach maturity in early years, be absorbed and give their strength to later and nobler growths. In this light of biology and child study, education is seen to contain far more delicate and intricate problems than adult psychology and past philosophers of education have any means for handling, and hence the great and only hope for advance in pedagogy lies, in the future, in the working out of these new lines lately so vigorously opened up. One can rest satisfied with any present system only by remaining ignorant of the results of the work of the last few years.

Biology has certainly one suggestion, and that is that these rudimentary forms must be well fed. Marshall¹ says that a plentiful supply of food yolk tends to hasten the embryo through the recapitulatory forms, or may even cause it to skip some; while the lack of food for the full development of even a rudimentary stage may fix the embryo forever in the rudimentary condition, as students of teratology maintain, and as the study of tadpoles would indicate.

Bring School Work more in Line with the other Unavoidable Educational Influences of Life. Another reform in education is sorely needed and progress along this line may soon be expected, that is in bringing the efforts of the school more into line with the other natural and unavoidable educational influences, such as heredity and the struggle for existence in daily life. When one recalls that such a student of instinct as Romanes grades the various instincts of the highest animals as high as twenty-three on a scale upon which normal man reaches only fifty, it can be seen what a broad and far-reaching heredity we have before considering the human race. The development of these instincts and of their human, later evolved offshoots, offers certainly the natural and easy path for education and should be the first work of the teacher. We should certainly go into co-partnership with nature when it can furnish half of our needed material already practically prepared.

As the engineer in laying his roads through the mountains always seeks out and follows the course of the streams, taking advantage of the well worn paths made by the flow of nature's forces along these lines for untold years, so must the educator seek out and utilize those neural or psychic paths along which there is an easier progress because of the hereditary imprint left by the passage of the forces of life this way through countless generations.

¹ Marshall. *Biological Lectures and Addresses*, 1894. Lecture XIII.

To bring together the best of the material now furnished upon the instincts and the training of animals by such careful workers as Darwin, Romanes, Wallace, Morgan, Mills, and others, and sift out the facts and principles shedding light or bearing upon human capacities and education is a work soon to be begun that will mark a new epoch in pedagogy. From this the kindergarten and early instruction should gain new life; for until the storm of adolescence begins to subside the instinct feelings bid fair to be proven by far the strongest factor in education.

In all probability this study of instinct will throw light upon the method of teaching by suggestion and hint, as opposed to such methodical hammering in as the "formal steps" and the usual Normal School pedagogy generally lead to. All of us, who ever really think at all, can remember instances in which a single question, an apt simile or a vague hint or hope, expressed perhaps in a public speech by some one, seized hold of our mind, set hundreds of new associations going, recurred ever and again as the days went by, each new fact giving it larger meaning till perhaps a whole new area was added to our mental life, gathered together by that one suggestion. Certainly these suggestions take hold, and will give no rest till followed out, only because they find material ready to receive them in the mind; and the possibility of their larger use in education rests upon a better knowledge of these dominant and moving mental appetites at different periods of life. If all the apperceptive material has to be consciously dragged up by the teacher and the interest awakened entirely by his efforts, that activity of suggestion which surmounts almost any obstacle and that mental hunger which devours any material give place to satiety and fatigue from dead effort of method. In the figure of Richter, to get the clearest note the hammer must just touch but never rest against the bell. Certainly no teacher or pupil could keep up this mode of teaching for five hours a day and in all the present school studies, but if a little more of it were used the five hours might be considerably reduced and part of the present wilderness of studies omitted.

The school work must also get into closer touch with the daily life of the child in the home, in the paths of business and upon the playground.

Play. The educational value of play has been much studied since Froebel's day, especially by the Italians.¹ The anthropologists have turned over to pedagogy large collections of the

¹ The best book is that of G. A. Colozza, "Il Giuoco Nella Psicologia e Nella Pedagogia;" pp. 1-93, *Il Giuoco Nella Psicologia*; pp. 93-159, *Il Giuoco Nella Storia Della Pedagogia*; pp. 159-283, *Il Giuoco Nella Pedagogia*.

great folk-games of many of the races,¹ furnishing an invaluable basis for the systematization of such a curriculum of educational games and songs, that are really of interest to children, as will relieve much of the burden of education and reach many children in whom the present school work fails to awaken any response. Johnson² has made a valuable start in this direction, and has since shown by practical application at Andover that many of the mental qualities acquired by book study can be better acquired in plays and games, and that this stimulus may lead on to a new interest and success in the usual school work, as well as form a valuable aid to discipline.

In like manner, efforts are being made to carry further another of Froebel's suggestions and make the learning of various trades and occupations an educational influence and a connection between daily practical life and the school. Not the kind of work done in manual, trade, and technical schools, in which facility is the end aimed at and is acquired by continued repetition; but to teach one or more trades, not to give facility in work or even to make the trade of use, but to teach it only so far as it educates the mind or the muscles, changing to something else as soon as this point is reached and before sufficient practice is given to attain the great facility required in daily work. A study is needed of the various trades to find those of most educational value and that can be most easily adapted to school work.

Relation of the School and the Home. Every wise teacher looks with grave concern upon the widening gap between the school and the home. Parents are too willingly throwing the education and training of their children upon the hands of the State and the teachers. It is possible that under the peculiar circumstances of the time no other means could have accomplished so much; but a longer continuance of present conditions

¹ Among the many valuable books, those most available are perhaps: Wm. Wells Newell, "Games and Songs of American Children;" New York, 1884. (This contains a valuable bibliography of foreign works. For later papers and books consult Johnson's Article in PED. SEM., III, 1.) Children's Singing Games with the Tunes to which They are Sung. Collected and edited by Alice B. Gomme. The Traditional Games of England, Scotland and Ireland, with Tunes, Singing Rhymes and Methods of Playing. Collected and Annotated by Alice Bertha Gomme. 2 vols. London, 1894. Since writing the above, Supt. Johnson's excellent article has appeared in the July, '97, North Western Monthly, giving a brief sketch of the development of play in pedagogy, and furnishing lists of games and a short working bibliography of the subject.

² G. E. Johnson, PED. SEM., III, 1. For an account of Supt. Johnson's "Play School" I am indebted to Dr. Hall. A brief account is also given by Herman T. Lukens, "Child Study for Superintendents," Ed. Rev. (N. Y.), Feb., 1897.

will inevitably lead to a wider breach. The formative influence upon character which the Herbartians claim for the orderly development of the mind through the school studies is granted, but it is the home life and training which furnish that basis of character without which the school is helpless. Nothing can take the place of the home, as Aristotle long ago saw, no one can relieve the parental responsibility. Civilizations have ever risen or fallen with the health, strength and purity, or disease and disintegration of home life. If our present school system must continue to disintegrate the home life, it will be a curse to mankind.

Some attempts are being made to unite these forces by a sort of "university extension," and lecture work with parents in the village High Schools, making these schools a center of culture and social influence among parents, students, and teachers alike. Dörpfeldt's plan of the "Freie Schulgemeinde,"¹ using the family as a basis of school organization and making it to participate more both in the local management and responsibilities of the school, has many suggestions for the American leaders. To solve the problem of the proper relation of the home and the school is utterly beyond the capacity of the present writer, but nothing is more apparent than the fact that pedagogy must soon handle this question far more earnestly and seriously.²

The Correlation of Myth and Science. The larger correlation in teaching of the mythopic and instinctive with the scientific and intellectual views of nature, is now demanding attention from a new standpoint, because of the better knowledge of child nature and the strong belief in the existence of what I have

¹ Dörpfeldt. "Schulgemeinde;" also see the "Fundamentstück."

² Since writing the above my attention has been attracted by the efforts made to solve the above problem in Brookline, Mass., and the happy results of these. The work began in inviting the co-operation of the mothers with the primary teachers in the training of the younger children. The teachers and parents hold regular social meetings and discussions, at which each gets valuable information from the other, and parent and teacher form plans for mutual helpfulness in furthering the interests of each child. This work has spread upward in the schools to very great advantage. The Springfield High School is now following and improving part of the Brookline plan. Dr. Atkinson has very carefully prepared a list of questions asking for needed information from parents with regard to the health, appetite, hours for meals and sleep and study, tastes, reading habits, peculiarities or special capacities or deficiencies, likes, dislikes, interests, etc., etc., of each child. These reports are to be filed away together with similar reports from the grammar school masters, and are to be used in getting a better understanding of each student, so that he may be given a more just and rational treatment. These plans, only parts of which are here hinted at, are in the right direction and well deserve further investigation by every teacher.

termed merely a "food relation" between the culture material of one period of life and the mental states of higher stages. The large returns in knowledge and increased interest in nature, expected from the introduction of juvenile science into the grade schools, have failed to be realized. On every hand the report of the higher teachers is that the little smattering of science has not only failed to give children the accurate knowledge desired, but has often seared off the budding interest beyond possibility of revival in the serious later science work. This is a sore disappointment to pedagogy, in a direction where only hope seemed possible a few years ago. It is another illustration of the danger of applying the adult standard to children and of building *a priori* educational ideals, instead of first examining into the mental condition of the child to see what he wants and what he can handle. If we had known ten years ago what is now known of children, it could have been seen beforehand that they have little or no interest or apperceptive organ for scientific theories till well on into adolescence, that their reason, interest in original sources and scientific accuracy, power of making large inference, and critical judgment, eagerness to question and solve doubts of this kind do not rise till late, while the early school years are filled with an animistic appreciation of nature, with intense love of the usual mythopoeic and folk-conceptions. It is out of these conceptions in the race and not from the lack of them that science and philosophy have developed. A broad and deep background of myth has preceded and underlain every great national philosophy. The race unable to develop this myth in youth has failed to develop the philosophy and science in adult life. The question is then asked in all seriousness, if the later healthy growth of scientific interest is not starved in its embryonic period when the child is started with the strong food of pure science and not fed first upon the pap of nature myth and folk lore. Certain it is that studies of children show them, in spite of our efforts, often saturated with these notions and ever in sympathy with them. These myths represent the highest responses of the noblest minds of primitive ages to the forces of nature, and that they should awaken responsive chords in the child is but natural; and, however hard it is for us adults to see how these false notions open the heart and interest and lead the way later to opposite scientific views, there is every reason to believe this to be true. A propaedeutic course in nature myth and folk-tale, and a proper correlation of this with the later scientific teaching suited to adolescence and manhood is what may be expected of future pedagogy. There are, to be sure, many problems both in kinds of myths to be selected and the exact method of teaching them.

President Hall is now engaged in a practical effort to make

at least a provisional correlation of these two views of teaching, and education has much to hope for in the near future from this effort. The great difficulty is, of course, in making the connection at the transition period of life between these opposing views. Mr. Henry R. Baker, and I believe also Dr. Hall, think it possible to bring these two views along in life together, making it a matter of varying emphasis—in childhood, much stress upon the myth side and very little on the scientific; in adolescence, shade gradually over to the opposite emphasis. By this means it is hoped to let the childish unity and sympathy with nature, expressed by the myth, pass over without break into the later philosophic, monistic unity. Whether this riding two horses at the same time, going in opposite directions, or this keeping two registers open in the soul, is possible or desirable the writer gravely doubts. That the mythopoeic view is the natural and the healthy one for little children seems quite certain, if a full soul and broad sympathy are to be developed; but it seems impossible, if even desirable, for this to modulate over to the scientific view without the doubt, upheaval, swing to the other extreme, oscillation, the *via dolorosa*, and reconstruction at adolescence. Upon this subject a better study of adolescence will doubtless throw light.

Religious Training. Closely connected with the problem of the relation between the school and the home, and the relation of the mythopoeic and scientific views of nature is the question of religious training. The provisional arrangement, growing out of the abuses of religion and the other necessities of the time, by which religious training has been divorced from the schools and considered beyond the pale of pedagogical science, must soon give place to the inevitable demand of nature. However useful such a separation has been in bridging over periods of retrogression and bigotry in both religion and pedagogy, to permanently keep religious and secular education separated is doing violence to our souls and trying to tear apart what is by nature one. The old faculty psychology is gone, a brighter era of religious toleration seems near, and now pedagogy must accept and own her whole field and face its problem of religious education squarely. To yield it longer to the theologians or to Special Providence is a criminal shirking of duty.¹ The

¹ Nowhere else in the history of text-book making was there ever such an opportunity as is now offered to the International Sunday School Lesson Committee. With a guarantee that their books will be used by over twelve millions of students, and that each committee's work will cover at least seven years, the possibilities of good or evil are incalculable, and yet there is not a man on the committee of great reputation as a pedagogue or psychologist. This is not intended to reflect upon the ability of the eminent theologians who prepare these lessons, or to suggest that a committee should be appointed composed

writer made two years ago a laborious, but little availing, attempt to begin a systematic study of Sunday School work, and to apply to it the methods of scientific pedagogy.¹ Dr. Hervey,² President Hall, and perhaps others have recently done work along the same line. But to improve the work of Sunday Schools will not suffice. When one considers that the dominant influence in the life of every race has been its religion, that religion has for thousands of years among all races been the very center and goal of all education, that, in fact, education itself is primarily a product and development of primitive religious regimen and ceremonies—the first special education of the race being wholly religious training, and everywhere the school-master evolving from the medicine-man or priest—and that now, even in spite of neglect, religion is yet the central influence in all great lives—when these facts are recognized, it seems necessary that religious training again be replaced as a dominant factor in education. The world needs the heart and feeling, the enthusiasm and hope that religion alone can give. In bringing this back into the schools, many and grave problems arise. The miserable failure of the so-called “undenominational” religious training attempted in the English Board schools³ offers little hope of success to those efforts to eliminate from the Bible and religious instruction till no particle is left that is objectionable to any sect. The meagre fragments left of the corpse appear to please nobody and to be of little value to the children. The German plan of having selected ministers to call at specified times and instruct the pupils of their own denominations seems to work far better; but under any plan the grave questions of training the religious teachers, and of what and how to teach at the various periods of child growth are still to be solved by pedagogy. Studies of the religious development, though as yet only preliminary, indicate, as mentioned before, that under any sort of instruction children pass through widely differing phases of religious appreciation and development, which appear to demand a

entirely of pedagogues and psychologists; but I do think that to prepare so gigantic an educational scheme without the earnest and continued co-operation of leaders in education is ridiculous—or would be were it not so pathetic, if not criminal.

¹ A. Caswell Ellis. “The Sunday School Work and Bible Study in the Light of Modern Pedagogy.” *PED. SEM.*, III, 3.

² Walter E. Hervey. “The Sunday Schools,” *The Review of Reviews*, Dec., 1896.

³ For a brief account of this trouble see *Rep. Bu. of Ed. (U. S. A.)*, 1893-4, pp. 208-17; also the *Educational Journals of England* for the last few years; specially the *Nineteenth Century*, Nov. 1893, “Religion—at the London School Board;” and Dec. 1893, “The London School Board—a reply to Hon. Lyulph Stanly.”

different kind of culture material and method of teaching. The full discussion cannot be entered here, but it suffices to say that in religion as in nature-study the process of growth must be better recognized. The mythopoeic and anthropomorphic conceptions in each field are those most intelligible to small children, arousing as nothing else does the interest and sympathies, and warming the heart, out of which, after all, come the issues of life. The same problem of the awakening and the change at adolescence is present here, as in the study of nature, though fraught with more serious consequences. It can hardly be doubted longer that the proper training in religion for young children is not a reduced juvenile form of the higher spiritual and philosophic religious conceptions of cultivated adults, for these are shown generally to awaken an utterly false response or none at all; but that young children should have the religious truths presented to them in the mythopoeic and anthropomorphic forms, which may undergo new interpretations in the child's soul as his growing natural capacity makes possible the rise from lower to higher conceptions of Deity and Divine laws. There are still the questions of what manner of teaching and of what myths have greatest forming power over the child's soul and at the same time prepare the way for the later growth, neither permanently moulding the soul to its primitive form nor throwing it into agnosticism when larger contradictory conceptions are reached.

As grave as are the problems presented by this method of teaching, they must be met; for educators to longer hold aloof or to refuse absolutely in the name of truth and science to teach young children thus, is to show no appreciation of the laws of nature's growth as seen everywhere, and to starve young religious natures. Children are shown the physical universe and allowed to believe what they are able, though we know they will see contours as flat shades and will have no appreciation of the principles of idealistic philosophy. Children, like men, can grow only by using the powers they already have, bumping their heads and learning better. Unless education prove recalcitrant to her duty, the whole question of religious training will be soon rehandled boldly, though reverently, and some order brought out of the present chaos of superstition and sentimentalism on the one hand and on the other a hardly less serious ignorance and bigotry under the name of truth and science. Religion will soon be given its larger and truer scope. In the schools it will be recognized that religious training is interwoven with every study, not as the school men used to make mathematics teach the Trinity, but that every new truth has its religious bearings, if so taught as to warm our sympathy for nature and our love of God and man and develop a deeper

appreciation of the marvellous perfection of Divine laws and the true dignity and duties of life.

Specialization, both in studying and teaching, is forging to the front in recent years. Specialization in studies on the part of college students is already generally recognized as necessary for the best mental development. Aside from the fact that the enormous growth of all sciences now makes it impossible for one to get even a smattering of them all, if he should try, it is seen that nothing so makes for good mental habits, clear thought and sound scholarship as for a student to investigate one subject thoroughly from all sides till he is a master in this small field. Nothing else inspires and gives the student a healthy self-respect so much as to feel that on this point, however small, "he is an authority and not an echo." Since the introduction of the comparative method in all branches of study, practical experience shows that almost any specialty, if pursued to its natural and proper extent, will lead the student to a broad, general culture that is better mastered, can be better handled, and is of more real mental value to its possessor than the disconnected, superficial knowledge of the many subjects supposed to be necessary for general culture. This specialization is, of course, the necessary outcome of the movement in education demanding that a child be allowed to follow those lines of effort for which he is by nature best fitted. Interests of children are so fluctuating, their power of concentration for any long-continued, serious effort so small until after puberty, that it seems that specialization should not be attempted before that time; but during adolescence, when the interests, the likes and dislikes, the enthusiasms and energies are very intense for periods of moderate length, it seems that specialization along lines of strong interest should, by all means, be allowed in the high schools, and possibly in the last grammar grades, in order that those adolescent energies be not wasted or turned into morbid channels, and that the habit be fostered in the youth of doing serious, intense work in the pursuit of what appears to him to be a worthy problem. This will not at this age continue long on any one subject, and will not at all exclude general culture—indeed, rightly followed, the normal interests of a healthy boy would soon cover, perhaps, a larger and better field than do our present *curricula*.

Specialization on the part of teachers is becoming far more common, though serious objections to it arise. We now have separate teachers for music, drawing and penmanship, generally for physical and manual training, and occasionally for science, nature study, or modern languages. The introduction of these specialists seems on the whole to have resulted advantageously. How far this can be done successfully only experience will tell,

but whatever is claimed for specialization on the part of students applies to teachers, and whatever may be lost, and much certainly is, from the necessary lack of continued intimate contact with the pupils and knowledge of them by these teachers, seems more than balanced by their superior knowledge and enthusiasm, which can be possessed only by a specialist.

Physical Education. Among the numerous advances in education none strike deeper and are more potent for good than the practical recognition again that upon the cultivation of a sound body rests ultimately the whole superstructure of education. The works in pathology, criminology, physiology and neurology, specially in the study of the effects of fatigue and of various stimulants and foods upon brain cells and mental and physical activity, already offer to pedagogy many valuable suggestions and command numerous changes in school programmes. The limits of this sketch compel me to refer to the originals for these facts in detail.¹

¹ The few books and articles referred to here are, of course, a small fraction of the number that might be given, but such works are selected as represent the best in their respective fields and yet are simple enough to be of use to the average intelligent teacher.

J. S. Clouston. *Clinical Lectures on Mental Diseases.*

Emil Kraepelin. *Lehrbuch der Psychiatrie*, 5th ed.

Havelock Ellis. *The Criminal.*

Wm. Ferri. *Criminal Sociology.*

H. H. Donaldson. *The Growth of the Brain.*

J. Ryland Whitaker. *Anatomy of the Brain and Spinal Chord.*

Ramon y Cajal. "*La Fine Structure des Centres Nerveux.*" *Proced. Royal Soc.*, Vol. 55.

C. F. Hodge. "A Microscopical Study of Changes due to Functional Activity in Nerve Cells." (Boston, 1892.) *Journal of Morphology*, Vol. VII, No. 2.

Burgerstein. "*Die Arbeitskurve einer Stunde.*" *Zeitschrift für Schulgesundheitspflege*, Band IV, Heft. 9, 10.

H. Emminghaus. "*Die Psychischen Störungen in Kindes-Alter.*" Gerhard's *Handbuch der Nervenkrankheiten*, Nachtrag II. Tübingen, 1887.

Keller, "*Pädagogische psychometrische Studien.*" *Biologischer Centralblatt*. 1894. Nos. 1, 2, 9.

A. Maggiora. "*Ueber die Gesetze der Ermüdung. Untersuchungen an Muskeln des Menschen.*" *Archiv. f. Phys.* (Du Bois Reymond), *Drittes und Viertes Heft*, 1890.

Mosso. *Die Ermüdung.* Leipzig, 1892.

Henry J. Berkley. "Alcoholic Poisoning." *J. Hop. Hospital Rep.*, Vol. VI, No. 1.

C. C. Stewart. "Effect of Acute Alcoholic Poisoning on Nerve Cells." *Jn. Ex. Med.*, Vol. I, No. 4.

Emil Kraepelin. *Ueber die Beeinflussung einfacher psychischer Vorgänge durch einige Arzneimittel.*

August Smith. *Die Alkoholfrage und ihre Bedeutung für Volkswohl und Volksgesundheit.*

C. F. Hodge. "Effect of Alcohol on Animal Activity." *Pop. Sci. Mo.*, Mar. and Apr., 1897.

It was a revolution when the monkish attempt to develop the soul by destroying the body gave place to the saner modern views; but this movement has been hampered seriously by the lack of educated leaders. Until very recently the director of physical education has generally been little more than a splendid physical animal leading in various lines of physical prowess and possessing a repertoire of empirically devised exercises and linements, courses of diet and bathing and rubbing that made muscular giants, in some particular line of those already possessing a physical stamina that could stand almost any hardship, but leaving the weak to look out for themselves or shattering their feeble frame under the strain of the heroic and unphysiological treatment. In fact, this order of things is not yet passed. Many of the leaders in physical culture are still little more than lackeys to lead exercises and to time and rub down athletes, possessing merely a smattering of anatomy and physiology and little acquaintance with the facts of neurology or the alimentary and culinary chemistry. The few educated leaders in this work know very well that such sights as four mile boat races with several collapsed hearts at the finish do not mean physical culture. It may be true that it is better to kill off a few men by over exertion, than to kill adolescent interest in athletics and return to the old monkish order by stopping all sports that are dangerous; but time is fast approaching when this is to be seen in its true light and the efforts of leaders of physical culture are to be directed towards more accurate experiments on the effect of different articles of diet at various ages and seasons of the year and under varying mental and physical tasks; the effect of long and short periods of sleep and the proper periods and alternations of different kinds of work, and of rest and work at different times of life. The present ignorance on these fundamental facts, which are open to direct experiment, is discouraging. A very little has been done at Chicago and Wesleyan and Clark on the subject of foods, but the writer has found absolutely nothing of value in English, and little more in German on the subject of how to rest and recuperate. Nothing is more demanded now than a thorough study of various methods of rest and recuperation; for upon capacity to rest depends capacity to work. The experiments of Mosso, Keller, Emminghaus and others show the

Heirnich Dehio. "*Experimentelle Untersuchungen ueber die Veränderungen der Ganglienzellen bei der acuten Alkoholvergiftung.* Centbl. f. Nervenk. und Psych. Marz-Heft. 1895.

W. O. Atwater. "How Food is Used in the Body." Century, June, 1897.

"Preliminary Report of Investigations on Metabolism by Man." Published by the Office of Experiment Stations of the United States Department of Agriculture.

rapid wear of the mental and physical organism in all kinds of work, and indicate the great advantage of short periods of work at high pressure alternating with short periods of rest ; but just what gives the greatest rest is as yet a subject of dispute. This much does seem certain, that intricate calisthenics and exercises demanding strong attention, or great physical exertion do not properly rest a brain tired from study. The need for a long period of continuous sleep, especially long in youth, is impressed ever more firmly ; but in what way to spend waking periods in order to best rest and recuperate for renewed efforts is still entirely unsettled ground. The matter of temperament and individual peculiarities will, of course, ever complicate the problem.

The larger views of physical training, the relation of the muscles as organs of the will to character, and the relation of bodily to emotional states are yet to receive adequate treatment.

Upon the practical side, it may all be summed up by saying that the stress of physical training will gradually shift from the present undue effort to cultivate strong muscles to an attempt primarily to preserve and foster a strong heart and lungs, nerves, liver, kidneys, stomach, etc. True it is that one of the chief means of developing these vital organs is found in the muscles, yet many of the present forms of exercise which develop muscle endanger or actually injure the vital organs. These must give place to saner measures of exercise, to well placed periods of rest, properly selected diet and clothing, and hygienically constructed dwellings, which are far more potent for physical and mental sanity than anything else in education.

In Conclusion. After surveying the tortuous progress of past centuries in educational ideals and methods, and looking at the intense activity of recent years and the uparalleled advance of knowledge in all of the sciences upon which pedagogy is based, one can but consider the present division among leaders of education as the prelude to the falling of many cherished idols to make way for a new philosophy built upon a larger and better knowledge of nature and of man. Every year is adding new facts to the store ; new phases of human life and human needs and possibilities are seen now as never before, and make only the more apparent the present ignorance and the insufficiency of the present systems. *Children must be studied.* With this new center for our educational universe, there must be confusion till more points are fixed and laws of movement known, but with the increase of investigation the new century will furnish data from which the synthetic mind of a Copernicus or a Kant can give such an account of the laws and growth of the human soul as is now little dreamed of in our philosophies.

EYE DEFECTS IN STUDENTS AND CHILDREN.

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The investigation, the results of which the present paper discusses, was undertaken for the purpose of finding out the condition of the eyes of young people engaged in study.

The tests were made by Dr. D. N. Alcorn, the able oculist of Stevens Point.

The writer is also greatly indebted to Dr. Alcorn for valuable suggestions in the preparation of this paper. Without his generous co-operation the investigation would have been impossible.

The tests were (1) the ordinary tests of each eye for vision, the sight of the other eye being shut off by an opaque disk; (2) the card test for astigmatism; (3) the Maddox multiple rod test for muscle trouble and (4) the diagnosing of errors of refraction by means of the ophthalmoscope. The one undergoing an examination sat twenty feet from the test chart. The type used in the chart was Hermann Snellen's, but as the type used in Snellen's charts is not always of the same size, owing to the carelessness of those who print them, I will give the measurements of the letters used in this examination.

The type which a normal eye should read at a distance of twenty feet was nine millimeters square. This represents normal vision and is designated in this paper by twenty twentieths. The twenty thirtieths type was thirteen millimeters square, the twenty fortieths eighteen millimeters, twenty sixtieths twenty-six millimeters, twenty eightieths thirty-five millimeters, twenty one hundred twentieths fifty-two, and twenty two hundredths eighty-seven millimeters square.

Over three hundred and forty were examined and all the tests were made in each case.

As those examined were of widely different ages, being pupils in the various grades of the model school as well as in the normal, I have preserved the natural divisions into which they fall, *i. e.*, normal students, grammar grade pupils and intermediates with the primary.

As the more defective eye rather than the better of the two gauges the eye strain, it seemed best to group the subjects on the basis of the less efficient eye.

Group I gives those students of the normal department whose

vision in both eyes was normal or better, *i. e.*, represented by $\frac{20}{20}$ or $\frac{20}{20} +$.

GROUP I.

Neither eye defective in vision.

- No. 1, age 20, latent astigmatism (slight).
- No. 2, age 23, no evident defect.
- No. 3, age 16, latent hyperopia — astigmatism — hyperphoria $1\frac{3}{4}^{\circ}$.
- No. 4, age 20, astigmatism—exophoria.
- No. 5, age 25, hyperopia—astigmatism.
- No. 6, age 18, astigmatism.
- No. 7, age 16, hyperopia—esophoria 3° —left, hyperphoria 2° .
- No. 8, age 22, no evident defect.
- No. 9, age 20, latent hyperopic astigmatism compound.
- No. 10, age 17, latent hyperopic astigmatism compound.
- No. 11, age 19, hyperopia.
- No. 12, age 16, hyperopia—esophoria 4° —left, hyperphoria.
- No. 13, age 19, esophoria $\frac{1}{2}^{\circ}$ —ciliary paresis.
- No. 14, age 23, latent hyperopic astigmatism.
- No. 15, age 31, mixed astigmatism—muscle trouble.
- No. 16, age 22, hyperopic astigmatism—esophoria 3° .
- No. 17, age 21, blepharitis.
- No. 18, age 20, hyperopic astigmatism—exophoria 1° .
- No. 19, age 22, esophoria 8° .
- No. 20, age 19, hyperopic astigmatism.
- No. 21, age 15, hyperopic astigmatism—esophoria 2° .
- No. 22, age 21, latent hyperopia.
- No. 23, age 23, hyperopic astigmatism—esophoria 2° .
- No. 24, age 16, hyperopia.
- No. 25, age 20, mixed astigmatism.
- No. 26, age 17, hyperopia—esophoria 2° .
- No. 27, age 17, no evident defect.
- No. 28, age 16, concomitant divergent strabismus—exophoria 6° —left, hyperphoria $\frac{1}{2}^{\circ}$.
- No. 29, age 19, hyperopia—ciliary spasms.
- No. 30, age 18, hyperopia.
- No. 31, age 15, latent hyperopia—exophoria 3° .
- No. 32, age 14, hyperopic astigmatism compound—right, hyperphoria $\frac{1}{2}^{\circ}$.
- No. 33, age 14, hyperopic astigmatism—esophoria 3° .
- No. 34, age 19, esophoria 1° .
- No. 35, age 21, right eye, hyperopic, left hyperopic astigmatism.
- No. 36, age 22, right eye, hyperopic, left, hyperopic astigmatism—esophoria 1° .
- No. 37, age 17, latent hyperopia.

GROUP II.

Including those normal students whose vision in the more defective eye is $\frac{3}{8}$ and better but not normal.

- No. 1, age 17, astigmatism—esophoria 12° .
- No. 2, age 23, hyperopia (slight).
- No. 3, age 19, hyperopic astigmatism.
- No. 4, age 35, esophoria 4° —left, hyperphoria $\frac{1}{2}^{\circ}$ —astigmatism.
- No. 5, age 19, myopic astigmatism.
- No. 6, age 21, myopia.
- No. 7, age 20, right eye, myopia astigmatism compound—esophoria 2° .
- No. 8, age 20, astigmatism—esophoria 7° .
- No. 9, age 21, myopic astigmatism compound—esophoria 1° .
- No. 10, age 22, latent hyperopia.¹
- No. 11, age 23, right eye, myopic astigmatism—left, myopia.
- No. 12, age 19, latent hyperopic astigmatism.
- No. 13, age 25, hyperopia—esophoria 4° .
- No. 14, age 17, latent hyperopia—esophoria 3° .
- No. 15, age 22, hyperopic astigmatism compound.
- No. 16, age 18, mixed astigmatism.
- No. 17, age 23, hyperopia—esophoria 3° .
- No. 18, age 22, myopia.
- No. 19, age 35, hyperopic astigmatism compound.
- No. 20, age 22, myopic astigmatism.
- No. 21, age 21, hyperopic astigmatism compound.
- No. 22, age 20, mixed astigmatism—esophoria 1° .
- No. 23, age 24, excessive esophoria.
- No. 24, age 22, mixed astigmatism.
- No. 25, age 20, left eye, hyperopic astigmatism—right eye, hyperopia.
- No. 26, age 18, excessive esophoria—left eye, myopic astigmatism.
- No. 27, age 16, latent hyperopia.
- No. 28, age 27, mixed astigmatism.
- No. 29, age 23, myopic astigmatism compound.
- No. 30, age 22, hyperopia—left, hyperphoria $\frac{1}{2}^{\circ}$.
- No. 31, age 23, latent hyperopia.
- No. 32, age 20, hyperopic astigmatism.
- No. 33, age 27, hyperopic astigmatism.
- No. 34, age 20, latent hyperopia.
- No. 35, age 24, myopic astigmatism—exophoria 2° —left, hyperphoria $\frac{1}{2}^{\circ}$.

¹ We often have manifest myopia where latent hyperopia really exists.

- No. 36, age 17, latent myopic astigmatism—esophoria 5° —right, hyperphoria $\frac{1}{2}^{\circ}$.
- No. 37, age 16, hyperopia.
- No. 38, age 19, myopic astigmatism—esophoria 2° .
- No. 39, age 18, latent hyperopia—hyperphoria $\frac{1}{2}^{\circ}$.
- No. 40, age 20, mixed astigmatism—esophoria.
- No. 41, age 21, myopia.
- No. 42, age 21, hyperopic astigmatism.
- No. 43, age 18, hyperopic astigmatism compound.
- No. 44, age 19, hyperopic astigmatism compound.
- No. 45, age 17, exophoria 4° —hyperopia.
- No. 46, age 22, right eye, hyperopic astigmatism—left, mixed astigmatism.
- No. 47, age 20, esophoria 2° —mixed astigmatism.
- No. 48, age 17, latent hyperopia.
- No. 49, age 18, hyperopic astigmatism compound—left, hyperphoria $\frac{1}{2}^{\circ}$ —esophoria 8° .
- No. 50, age 19, hyperopic astigmatism compound—esophoria 1° .
- No. 51, age 19, hyperopic astigmatism compound—esophoria, 1° .
- No. 52, age 20, hyperopia—esophoria 3° .
- No. 53, age 20, right eye, hyperopic astigmatism—left, myopic astigmatism—esophoria 2° .
- No. 54 age 35, hyperopic astigmatism compound.
- No. 55 age 25, hyperopic astigmatism compound—exophoria 1° .
- No. 56, age 19, excessive myopic astigmatism—exophoria 1° .
- No. 57, age 18, myopia—exophoria 1° .
- No. 58, age 23, right eye, hyperopic astigmatism—left, myopic astigmatism—exophoria 2° .
- No. 59, age 17, hyperopic astigmatism compound—esophoria 3° .
- No. 60, age 21, hyperopic astigmatism—esophoria 1° .
- No. 61, age 22, hyperopic astigmatism—esophoria 1° —left, hyperphoria $\frac{1}{2}^{\circ}$.
- No. 62, age 20, hyperopic astigmatism.
- No. 63, age 20, hyperopia.
- No. 64, age 19, left, hyperphoria 2° .
- No. 65, age 23, latent hyperopia.
- No. 66, age 16, hyperopia—esophoria 2° .
- No. 67, age 21, myopic astigmatism—left, hyperphoria $\frac{1}{2}^{\circ}$ —esophoria 2° .
- No. 68, age 19, myopic astigmatism—esophoria 1° .
- No. 69, age 17, hyperopic astigmatism—exophoria 2° .
- No. 70, age 41, irregular astigmatism—myopic in one part and hyperopic in the other.
- No. 71, age 40, hyperopic astigmatism.

- No. 72, age 26, hyperopia—esophoria 2° .
 No. 73, age 16, hyperopic astigmatism—esophoria 15° —right, hyperphoria 2° .
 No. 74, age 22, hyperopia—esophoria 2° —left, hyperphoria 2° .
 No. 75, age 17, asthenopia.
 No. 76, age 22, mixed astigmatism—esophoria 1° .
 No. 77, age 26, esophoria 4° —right eye, hyperopic—left, hyperopic astigmatism.
 No. 78, age 30, hyperopic astigmatism—exophoria 3° .
 No. 79, age 20, esophoria 1° —right eye, hyperopia—left, hyperopic astigmatism.
 No. 80, age 19, hyperopia—esophoria 4° .
 No. 81, age 20, hyperopic astigmatism.
 No. 82, age 14, exophoria 1° —right eye, hyperopia—left, hyperopic astigmatism.
 No. 83, age 18, astigmatism.
 No. 84, age 20, myopic astigmatism—exophoria 1° .
 No. 85, age 23, hyperopic astigmatism compound—esophoria 1° .
 No. 86, age 24, latent hyperopia.
 No. 87, age 29, myopic astigmatism—esophoria 2° .
 No. 88, age 18, hyperopic astigmatism—exophoria 5° —right, hyperphoria 1° .
 No. 89, age 19, left eye, hyperopic astigmatism compound—right, hyperopic astigmatism.
 No. 90, age 24, myopia—asthenopia.
 No. 91, age 22, mixed astigmatism—esophoria 2° —right, hyperphoria $\frac{1}{2}^{\circ}$.
 No. 92, age 17, hyperopic astigmatism—esophoria 1° .
 No. 93, age 18, hyperopia.
 No. 94, age 26, hyperopic astigmatism—esophoria 2° .
 No. 95, age 19, myopia—esophoria 1° .
 No. 96, age 22, hyperopic astigmatism—esophoria 2° .
 No. 97, age 16, mixed astigmatism—esophoria 2° .
 No. 98, age 16, hyperopic astigmatism—esophoria 1° .
 No. 99, age 34, myopic astigmatism—esophoria 4° —right, hyperphoria 1° .
 No. 100, age 15, mixed astigmatism—exophoria 2° .
 No. 101, age 21, hyperopic astigmatism—esophoria 3° .
 No. 102, age 19, myopia.
 No. 103, age 21, hyperopic astigmatism compound—exophoria 1° .
 No. 104, age 23, hyperopic astigmatism compound—esophoria 3° .
 No. 105, age 22, hyperopic astigmatism compound—esophoria 1° .
 No. 106, age 21, hyperopic astigmatism compound—oblique astigmatism.

- No. 107, age 19, right eye, latent hyperopia—left eye, hyperopic astigmatism compound.
- No. 108, age 23, hyperopic astigmatism compound—exophoria 1° —left, hyperphoria $\frac{1}{2}^{\circ}$.
- No. 109, age 17, hyperopic astigmatism compound—concomitant divergent strabismus.
- No. 110, age 18, latent hyperopia—exophoria 1° .
- No. 111, age 18, hyperopia—exophoria 1° —left, hyperphoria 1° .
- No. 112, age 15, latent hyperopic astigmatism—exophoria 5° .
- No. 113, age 19, hyperopic astigmatism compound.
- No. 114, age 15, myopia—esophoria 2° .
- No. 115, age 19, right eye, hyperopia—left, (slight) myopia.
- No. 116, age 18, hyperopia—exophoria $\frac{1}{2}^{\circ}$.
- No. 117, age 19, latent hyperopia—esophoria $\frac{1}{2}^{\circ}$.
- No. 118, age 15, hyperopic astigmatism compound—esophoria 2° .
- No. 119, age 19, hyperopic astigmatism—esophoria 2° .
- No. 120, age 17, hyperopic astigmatism compound—esophoria 2° .
- No. 121, age 17, right eye, myopia—left, hyperopia—esophoria 2° .
- No. 122, age 18, mixed astigmatism—esophoria 2° .
- No. 123, age 17, myopia—esophoria 1° .
- No. 124, age 21, mixed astigmatism—esophoria $\frac{1}{2}^{\circ}$ —hyperphoria (slight).
- No. 125, age 20 hyperopic astigmatism—esophoria 5° .
- No. 126, age 33, right eye, hyperopia—left, hyperopic astigmatism—right, hyperphoria $\frac{1}{2}^{\circ}$.
- No. 127, age 24, hyperopia—esophoria 3° .
- No. 128, age 25, hyperopia.
- No. 129, age 19, hyperopia—exophoria 2° .
- No. 130, age 16, hyperopic astigmatism compound—exophoria 1° —right, hyperphoria $\frac{1}{2}^{\circ}$.
- No. 131, age 17, hyperopic astigmatism—esophoria 2° .
- No. 132, age 18, right eye, hyperopic astigmatism compound—left, hyperopia—esophoria 2° .
- No. 133, age 23, hyperopic astigmatism compound—exophoria.

GROUP III.

Including those normal students whose vision in the more defective eye was $\frac{2}{8}$ or better but not so good as $\frac{3}{8}$.

- No. 1, age 35, myopic astigmatism—esophoria 4° —left, hyperphoria $\frac{1}{2}^{\circ}$.
- No. 2, age 26, myopic astigmatism.
- No. 3, age 20, right eye, myopic astigmatism compound—left, myopia—esophoria 2° .

- No. 4, age 17, hyperopic astigmatism—esophoria.
 No. 5, age 16, mixed astigmatism.
 No. 6, age 16, mixed astigmatism exophoria 10° .
 No. 7, age 23, mixed astigmatism exophoria 2° .
 No. 8, age 26, hyperopic astigmatism compound—hyperphoria 3° .
 No. 9, age 18, mixed astigmatism.
 No. 10, age 25, right eye, myopic astigmatism—left, myopia.
 No. 11, age 21, myopic astigmatism—right, hyperphoria $\frac{1}{2}^{\circ}$.
 No. 12, age 18, right eye, hyperopic astigmatism—left, hyperopia—esophoria.
 No. 13, age 18, hyperopic astigmatism.
 No. 14, age 24, myopic astigmatism—esophoria 5° .
 No. 15, age 25, myopic astigmatism—exophoria 11° .
 No. 16, age 19, left, hyperphoria $\frac{1}{2}^{\circ}$.
 No. 17, age 18, mixed astigmatism—esophoria.
 No. 18, age 17, mixed astigmatism—esophoria 2° .
 No. 19, age 29, hyperopic astigmatism compound.
 No. 20, age 18, hyperopic astigmatism at an oblique angle—esophoria 3° .
 No. 21, age 17, myopic astigmatism—exophoria 2° .
 No. 22, age 17, hyperopic astigmatism—esophoria 2° .
 No. 23, age 19, hyperopic astigmatism—esophoria 1° .
 No. 24, age 24, hyperopic astigmatism—esophoria 1° .
 No. 25, age 18, hyperopic astigmatism—esophoria 3° .
 No. 26, age 16, hyperopia—esophoria 5° .
 No. 27, age 20, hyperopic astigmatism—esophoria 1° .
 No. 28, age 21, hyperopia—esophoria 2° —right, hyperphoria $\frac{1}{2}^{\circ}$.
 No. 29, age 17, hyperopic astigmatism compound—esophoria 1° .
 No. 30, age 18, hyperopic astigmatism—esophoria 2° —right, hyperphoria $\frac{1}{2}^{\circ}$.
 No. 31, age 22, hyperopic astigmatism compound—esophoria 5° .

GROUP IV.

Including those normal students whose vision in the more defective eye was $\frac{3}{8}$ or better but not so good as $\frac{4}{8}$.

- No. 1, age 24, hyperopic astigmatism compound—left, hyperphoria $\frac{1}{2}^{\circ}$.
 No. 2, age 17, myopic astigmatism compound.
 No. 3, age 22, latent hyperopia—exophoria 2° .
 No. 4, age 25, myopic astigmatism.
 No. 5, age 26, right eye, myopic astigmatism compound—left, myopic astigmatism.
 No. 6, age 17, mixed astigmatism—exophoria 12° —oblique muscle trouble.

- No. 7, age 36, myopic astigmatism.
 No. 8, age 21, myopic astigmatism compound—convergent strabismus.
 No. 9, age 22, right eye, myopic astigmatism compound—left, myopia.
 No. 10, age 21, hyperopic astigmatism—exophoria 2°.
 No. 11, age 21, mixed astigmatism—esophoria 3°.
 No. 12, age 18, mixed astigmatism—exophoria 1°.
 No. 13, age 32, mixed astigmatism—esophoria 1°.
 No. 14, age 21, hyperopic astigmatism compound—esophoria 3°.
 No. 15, age 23, hyperopic astigmatism compound—esophoria 3°—left, hyperphoria ½°.
 No. 16, age 23, myopia—esophoria 2°.
 No. 17, age 25, astigmatism.
 No. 18, age 26, hyperopic astigmatism compound—convergent strabismus.
 No. 19, age 18, myopic astigmatism—esophoria 1°.
 No. 20, age 35, myopic astigmatism—right, hyperphoria 1°.

GROUP V.

Including those normal students whose vision in the more defective eye was $\frac{2}{8}$ or better but not so good as $\frac{3}{8}$.

- No. 1, age 23, myopic astigmatism—exophoria 2°.
 No. 2, age 23, mixed astigmatism—right, hyperphoria 2°.
 No. 3, age 24, mixed astigmatism.
 No. 4, age 25, mixed astigmatism—right eye, hyperopia—left, myopia.
 No. 5, age 17, hyperopia—concomitant convergent strabismus.
 No. 6, age 18, hyperopic astigmatism compound—esophoria 1°.
 No. 7, age 20, myopic astigmatism—esophoria 2°.

GROUP VI.

Including those normal students whose vision in the more defective eye was $\frac{2}{10}$ or better but not so good as $\frac{3}{8}$.

- No. 1, age 19, hyperopic astigmatism compound—esophoria 3°—left, hyperphoria ½°.
 No. 2, age 16, hyperopic astigmatism—esophoria 1°.
 No. 3, age 19, right eye, hyperopic astigmatism compound—left, hyperopic astigmatism—divergent strabismus.
 No. 4, age 19, hyperopic astigmatism compound.
 No. 5, age 14, myopic astigmatism compound—esophoria 7°—left, hyperphoria ½°.
 No. 6, age 20, right eye, hyperopic astigmatism—left, hyperopic astigmatism compound exophoria 5°.
 No. 7, age 18, myopic astigmatism compound.

GROUP VII.

Including those normal students whose vision in the more defective eye was $\frac{20}{60}$ or better but not so good as $\frac{20}{40}$.

No. 1, age 25, exophoria 12° —right, hyperphoria 1° —amblyopia.

No. 2, age 19, hyperopic astigmatism—partial atrophy of left optic nerve.

No. 3, age 23, myopic astigmatism—concomitant divergent strabismus.

No. 4, age 20, myopic astigmatism compound.

No. 5, age 21, excessive mixed astigmatism.

No. 6, age 20, hyperopic astigmatism compound—esophoria 3° .

No. 7, age 21, myopic astigmatism compound.

No. 8, age 20, myopia.

No. 9, age 18, right eye, myopic astigmatism compound—left, mixed astigmatism—ciliary spasms.

No. 10, age 22, mixed astigmatism—left, hyperphoria 1° .

No. 11, age 26, hyperopic astigmatism compound—esophoria 2° .

GROUP VIII.

Including those normal students whose vision in the more defective eye was below $\frac{20}{60}$.¹

No. 1, age 19, R. V. $\frac{8}{20}$ L. V. $\frac{8}{20}$ ² myopic astigmatism compound—concomitant divergent strabismus.

No. 2, age 20, R. V. $\frac{8}{20}$ L. V. $\frac{8}{20}$, myopic astigmatism compound.

No. 3, age 20, R. V. $\frac{8}{20}$ L. V. $\frac{8}{20}$, myopic astigmatism compound.

No. 4, age 18, R. V. $\frac{8}{20}$ L. V. $\frac{20}{20}$, traumatic cataract—slight hyperopia.

No. 5, age 22, R. V. $\frac{20}{40}$ L. V. $\frac{8}{20}$, excessive hyperopia—amblyopia.

No. 6, age 23, R. V. $\frac{8}{20}$ L. V. $\frac{20}{80}$, hyperopic astigmatism compound.

No. 7, age 18, R. V. $\frac{8}{20}$ L. V. $\frac{8}{20}$, myopic astigmatism compound—esophoria 2° —left, hyperphoria $\frac{1}{2}^\circ$.

No. 8, age 23, R. V. $\frac{20}{40}$ L. V. $\frac{12}{20}$, hyperopic astigmatism compound.

No. 9, age 17, R. V. $\frac{8}{20}$ L. V. $\frac{4}{20}$, myopic astigmatism compound.

No. 10, age 20, R. V. $\frac{20}{20}$ L. V. $\frac{10}{20}$, myopia—exophoria 16° .

No. 11, age 20, R. V. $\frac{4}{20}$ L. V. $\frac{2}{20}$, myopia—exophoria 2° .

¹ As the vision of those below $\frac{20}{60}$ is too irregular to admit of classification the vision is given in each case.

² R. V. = vision of the right eye. L. V. = vision of the left eye. The numerator as before represents the distance from the chart in feet.

If we turn to Group I for a moment we find that out of two hundred and fifty-seven, the entire number of normal students students examined, only thirty-seven or fourteen and thirty-nine hundredths per cent. have the normal vision of twenty twentieths.

It is important to notice that of these thirty-seven students with normal vision five have astigmatism without hyperopia, ten hyperopia without astigmatism and fourteen have both defects, while nineteen have muscle trouble with or without other difficulties, and only three have no evident defects.

It should be noted that no mydriatic was used in the examinations, as would have been necessary had the fitting of glasses been the purpose. Without a mydriatic some defects fail to disclose themselves and the muscle trouble is almost always greater one way or the other than the tests show. X

Passing to Group II, we find that one hundred and thirty-three students, that is, fifty-one and seventy-five hundredths per cent., have at least one eye whose vision is between twenty twentieths and twenty thirtieths. In other words, that they may recognize with this eye any letter in the alphabet at a distance of twenty feet, these letters must be thirteen millimeters square.

Thirty-one in this group have hyperopia, thirty-four astigmatism, and fifty-six have a combination of both in the simple or compound form. In addition, eighty-five have muscle trouble, usually in connection with hyperopia or astigmatism or both.

The number of cases of manifest muscle trouble found is remarkable. In Group I nineteen out of thirty-seven had this difficulty, and in Group II eighty-five out of one hundred and thirty-three. In each group more than fifty per cent. showed some form of this defect.

In each of the two groups more than fifty per cent. have astigmatism with or without hyperopia.

It may be, as one authority has said, that almost all children are hyperopic at birth, but why this large per cent. of astigmatism and muscle trouble? Are eyes defective in all these respects at birth, or is it rather due to the accompaniments of civilization by which night is turned into day and the strain which was once limited to the time of sunlight is now relieved only during sleep?¹ Or, again, is that which manifests itself in one disease or another the result of continued imperfect function, whose primary cause is to be found in the nerve centers, as Dr. Prentice thinks?

I am well aware that it is much easier to ask these questions

¹ We often have manifest myopia where latent hyperopia really exists.

than to answer them, but a clear recognition of the importance of any problem is the beginning of its solution.

As civilization advances the fund of necessary knowledge constantly increases, and in its acquisition the eyes are ever put to severer strain. It is possible that the imperfect work of nature will require earlier correction than has hitherto been thought wise; or it may be that our school arrangements of seating, lighting, school hours, etc., weaken the eyes more than the study necessitates. The question is certainly worth investigation.

If we combine groups V, VI, VII and VIII, that is, those whose vision in the more defective eye is below twenty sixtieths, we find that the new group thus formed contains thirty-six, or only one less than those whose vision in both eyes is normal or better.

In order that a comparison might be made between younger and older scholars in vision and eye defect, pupils from the grades were also examined.

Table IX contains those found in the seventh and eighth grades whose vision in both eyes was normal or better.

GROUP IX.

Including those seventh and eighth grade pupils whose vision in both eyes was normal or better, i. e., represented by $\frac{20}{20}$ or $\frac{20}{20} +$.

- No. 1, age 14, right eye, hyperopic astigmatism—esophoria 2° .
- No. 2, age 12, hyperopic astigmatism compound—esophoria 2° .
- No. 3, age 15, hyperopia—esophoria 6° —right, hyperphoria $\frac{1}{2}^{\circ}$.
- No. 4, age 13, hyperopic astigmatism compound—exophoria 2° .
- No. 5, age 14, myopic astigmatism.
- No. 6, age 14, hyperopia.
- No. 7, age 17, hyperopia—concomitant divergent strabismus.
- No. 8, age 13, hyperopia.
- No. 9, age 16, hyperopia.

GROUP X.

Including those seventh and eighth grade pupils whose vision in the more defective eye was $\frac{20}{20}$ and better but not so good as $\frac{20}{20}$.

- No. 1, age 14, hyperopic astigmatism compound—esophoria 2° —right, hyperphoria $\frac{1}{2}^{\circ}$.
- No. 2, age 12, hyperopic astigmatism compound—esophoria 2° .
- No. 3, age 15, hyperopic astigmatism compound—esophoria 8° .
- No. 4, age 17, hyperopic astigmatism compound.
- No. 5, age 13, hyperopic astigmatism compound.
- No. 6, age 14, right eye, hyperopia—left, hyperopic astigmatism—exophoria 5° —left, hyperphoria 1° .

- No. 7, age 11, hyperopic astigmatism compound—esophoria 2°.
 No. 8, age 12, hyperopic astigmatism compound—esophoria.
 No. 9, age 13, hyperopia—esophoria 7°.
 No. 10, age 14, hyperopic astigmatism compound—right hyperphoria $\frac{1}{2}^{\circ}$.
 No. 11, age 14, myopic astigmatism—exophoria 6°.
 No. 12, age 15, hyperopia—esophoria 2°.
 No. 13, age 14, hyperopic astigmatism compound.
 No. 14, age 16, mixed astigmatism—esophoria 4°—right, hyperphoria $2\frac{1}{2}^{\circ}$.
 No. 15, age 13, hyperopic astigmatism compound—esophoria 1°.
 No. 16, age 19, mixed astigmatism—hyperesophoria.
 No. 17, age 17, hyperopic astigmatism compound—esophoria 3°.
 No. 18, age 14, esophoria 3°.
 No. 19, age 13, hyperopia.
 No. 20, age 17, hyperopic astigmatism—esophoria $\frac{1}{2}^{\circ}$ right, hyperphoria $\frac{1}{2}^{\circ}$.
 No. 21, age 15, hyperopic astigmatism compound.
 No. 22, age 17, hyperopic astigmatism compound—esophoria 2°.
 No. 23, age 17, right eye, hyperopic astigmatism compound—left, hyperopia—esophoria 2°.

GROUP XI.

Including those seventh and eighth grade pupils whose vision in the more defective eye was $\frac{2}{8}$ or better but not so good as $\frac{3}{8}$.

- No. 1, age 12, hyperopia—exophoria 12°—right, hyperphoria 7°.
 No. 2, age 16, hyperopic astigmatism compound—esophoria 2°.
 No. 3, age 14, right eye, myopic astigmatism—left, hyperopic astigmatism compound—esophoria 5° left, hyperphoria $\frac{1}{2}^{\circ}$.
 No. 4, age 13, hyperopia—esophoria 1°.

GROUP XII.

Including those seventh and eighth grade pupils whose vision in the more defective eye was $\frac{2}{8}$ or better but not so good as $\frac{3}{8}$.

- No. 1, age 13, right eye, hyperopia—left, hyperopic astigmatism compound.
 No. 2, age 16, hyperopic astigmatism compound—exophoria 2°.
 No. 3, age 17, right eye, hyperopic astigmatism compound—left, mixed astigmatism.
 No. 4, age 18, hyperopic astigmatism compound—exophoria 2°.

GROUP XIII.

Including those seventh and eighth grade pupils whose vision in the more defective eye was $\frac{2}{8}$ or better but not so good as $\frac{3}{8}$.

- No. 1, age 16, myopic astigmatism compound—esophoria 5°—right, hyperphoria $\frac{1}{2}^{\circ}$.

GROUP XIV.

Including those seventh and eighth grade pupils whose vision in the more defective eye was $\frac{2}{10}$ or better but not so good as $\frac{3}{10}$.

No. 1, age 14, myopia—marked anisometropia.

There were none in these grades whose vision in the more defective eye fell below $\frac{2}{10}$.

PRIMARY AND INTERMEDIATE GRADES.

GROUP XV.

Including those pupils in the primary and intermediate grades whose vision in both eyes was normal or better, i. e., represented by $\frac{2}{10}$ or $\frac{3}{10}$ +.

No. 1, age 12, hyperopia—esophoria 1° .

No. 2, age 12, hyperopia.

No. 3, age 14, hyperopic astigmatism—right, hyperphoria $\frac{1}{2}^{\circ}$ —exophoria 1° .

No. 4, age 14, hyperopia—exophoria 3° —right, hyperphoria 2° .

No. 5, age 9, hyperopic astigmatism compound—esophoria 1° —right, hyperphoria 2° .

No. 6, age 7, hyperopic astigmatism compound—esophoria 1° .

No. 7, age 8, hyperopia—concomitant divergent strabismus.

No. 8, age 10, hyperphoria.

GROUP XVI.

Including those primary and intermediate pupils whose vision in the more defective eye was $\frac{3}{10}$ or better but not so good as $\frac{4}{10}$.

No. 1, age 11, astigmatism.

No. 2, age 12, right eye, astigmatism compound—left, mixed astigmatism.

No. 3, age 13, hyperopic astigmatism compound.

No. 4, age 11, hyperopic astigmatism compound.

No. 5, age 11, hyperopic astigmatism compound.

No. 6, age 10, hyperopic astigmatism compound—esophoria 4° .

No. 7, age 10, hyperopic astigmatism compound.

No. 8, age 11, hyperopic astigmatism compound—esophoria 4° .

No. 9, age 10, hyperopic astigmatism compound—esophoria 3° .

No. 10, age 11, hyperopic astigmatism compound—esophoria.

No. 11, age 12, hyperopic astigmatism—exophoria 9° right, hyperphoria 2° .

No. 12, age 11, hyperopic astigmatism compound—exophoria 5° .

No. 13, age 11, hyperopic astigmatism compound—esophoria 3° .

No. 14, age 12, hyperopic astigmatism compound—esophoria 3° —right, hyperphoria $\frac{1}{2}^{\circ}$.

No. 15, age 12, hyperopic astigmatism compound.

- No. 16, age 13, hyperopic astigmatism compound—esophoria 1°.
 No. 17, age 12, hyperopic astigmatism compound—esophoria 1°.
 No. 18, age 12, hyperopic astigmatism compound.
 No. 19, age 9, hyperopic astigmatism compound—esophoria 4°.
 No. 20, age 11, hyperopic astigmatism compound—esophoria 4°.
 No. 21, age 9, hyperopic astigmatism compound.
 No. 22, age 11, hyperopic astigmatism compound—esophoria 2°.
 No. 23, age 9, hyperopic astigmatism compound—esophoria 2°.
 No. 24, age 11, hyperopic astigmatism compound.

GROUP XVII.

Including those primary and intermediate pupils whose vision in the more defective eye was $\frac{3}{8}$ or better but not so good as $\frac{3}{8}$.

- No. 1, age 11, mixed astigmatism—exophoria 2°.
 No. 2, age 12, right eye, mixed astigmatism—left, hyperopia.
 No. 3, age 12, hyperopic astigmatism compound—esophoria 2°.
 No. 4, age 14, hyperopic astigmatism.
 No. 5, age 12, hyperopia.
 No. 6, age 12, hyperopic astigmatism compound—esophoria 1°.

GROUP XVIII.

Including those primary and intermediate pupils whose vision in the more defective eye was $\frac{3}{8}$ or better but not so good as $\frac{3}{8}$.

- No. 1, age 10, myopic astigmatism compound, esophoria 4°—
 blepharitis marginalis.

There were none whose vision in the more defective eye was $\frac{3}{8}$ or better but not so good as $\frac{3}{8}$.

GROUP XIX.

Including those primary and intermediate pupils whose vision in the more defective eye was $\frac{1}{10}$ or better but not so good as $\frac{3}{8}$.

- No. 1, age 13, myopic astigmatism compound—esophoria 3°.
 No. 2, age 9, hyperopic astigmatism compound.

GROUP XX.

Including those primary and intermediate pupils whose vision in the more defective eye was $\frac{2}{10}$ or better but not so good as $\frac{3}{10}$.

- No. 1, age 19, Nystagmus—the muscles, of course, could not be tested.

There were none whose vision in the more defective eye fell below $\frac{2}{10}$.

Table I shows the percentage of pupils from the three departments of the school, normal, grammar and intermediate with the primary, found in the eight grades of vision.

TABLE I.

Vision.	Normal Department.	Grammar Department.	Intermediate and Primary Department.
$\frac{3}{8}$ or better	14.39%	21.42%	19.04%
$\frac{3}{8}$ or better but not so good as $\frac{3}{8}$	51.75%	54.76%	57.14%
$\frac{1}{2}$ or better but not so good as $\frac{3}{8}$	12.06%	9.52%	14.28%
$\frac{1}{2}$ or better but not so good as $\frac{1}{2}$	7.78%	9.52%	2.38%
$\frac{1}{2}$ or better but not so good as $\frac{1}{2}$	2.72%	2.38%	0%
$\frac{1}{4}$ or better but not so good as $\frac{1}{2}$	2.72%	2.38%	4.76%
$\frac{1}{4}$ or better but not so good as $\frac{1}{4}$	4.28%	0%	2.38%
Below $\frac{1}{4}$	4.28%	0%	0%

From Table I it is seen that the percentage of pupils with normal vision in both eyes is much greater in the grammar grades than in the normal department, and, while the percentage in the intermediate and primary is less than in the grammar, it is still markedly above that in the normal school.

A larger number of pupils from the lower grades will have to be examined before a positive statement can be made regarding the comparative vision of pupils in the grades.

This investigation, indicates however, that there is a steady decrease in the acuteness of vision of pupils as we advance from the lower grades to the higher and to students of the age of those who are in the normal department.

This view is strengthened by combining those coming within the first three groups, *i. e.*, those whose vision is between $\frac{3}{8}$ or better and $\frac{1}{2}$, and also those whose vision falls below $\frac{1}{2}$. This is shown in Table II.

TABLE II.

Vision.	Normal Department.	Grammar Grades.	Intermediate and Primary Grades.
$\frac{3}{8}$ or better to and including $\frac{1}{2}$	78.21%	85.71%	90.47%
$\frac{1}{2}$ to $\frac{1}{4}$ or below.....	21.78%	14.28%	9.52%

Table II shows that the number of normal students whose vision is $\frac{3}{8}$ or better is markedly less than in the grammar

department, and the number in the grammar grades is again greatly exceeded by those in the intermediate and primary. The same difference is shown when we consider those whose vision falls below $\frac{1}{8}$. The percentage in the normal department is largest, followed by the grammar grades, while only 9.52% of those examined from the intermediate and primary grades come into this group.

The results of this investigation would seem then to justify the conclusion that about fifty per cent. (50%) of all pupils have at least one eye whose vision is not normal but falls somewhere between this and $\frac{1}{8}$. There also appears to be a decrease in the acuteness of vision as we pass up the grades.

The number of pupils with anisometropic eyes did not differ greatly in the grades and normal department. The degree of anisometropia, however, was noticeably greater among the older pupils and students, leading to the conclusion that continued use of unlike eyes without correction increases the difference. This is probably due to the fact that the poorer eye does little or no work and so gradually loses its power.

But little attention has thus far been given to correcting the defects in the eyes of children. It is not unreasonable to assume that this neglect is one cause of the increase of eye troubles among older pupils. This eye strain is undoubtedly a fertile field for many other ailments.

"Jessup reiterates the well known fact that persistent and recurring headaches in young persons and in those near the presbyopic age are in many cases due to an error of refraction, weak accommodation, and anomalies of the extrinsic muscles. Mittendorf reports four thousand (4,000) cases of headache that were relieved by the correction of optical defects. . . . Coover details fifteen cases of reflex irritation following eye strain. Among the prominent symptoms, all relieved by full correction, are attacks of convulsions resembling epilepsy, caused by continued use of the eye at the near point. Headaches, vertigo, nausea, constant pains over the brows and occiput, restlessness, melancholia, loss of appetite, faintness, insomnia, palpitation of the heart, chorea, stammering, cough without expectoration, irritation, thickness of speech and numbness of the hand and tongue, mental confusion, backaches, dyspepsia are numbered among the symptoms."¹

Any defect of the eye which must be overcome before clear vision is possible constantly draws from the nerve centers more force than the center can healthfully supply. "For example, a short superior muscle in one eye requires many times the

¹ "The American Year-Book of Medicine and Surgery," 1897, pp. 893, 894.

amount of nerve-force to perform the function that the centers were ever intended to furnish."¹

An interesting fact, though by no means a new one, was repeatedly observed. Young boys and girls with more defect than some older ones had never experienced any trouble with their eyes, while the older ones, with much less defect, were constantly annoyed by eye ache or the blurring of the letters. The difference was that the vigorous nervous system of the young boys and girls was able to sustain the irritation of the poorly constructed eye and, by an over generous supply of nerve force, could compel the eye to do its work without apparent injury, while the more exhausted nerve centers of the young men and women could not stand the constant call for more energy. "Disease is localized abnormal innervation and always central in the nervous system, being a lack or excess of motive force."² It should not be forgotten, however, that eye strain is a potent factor in this disturbance of the nerve centers.

The prevailing belief that glasses should never be worn by children prevents their eyes from receiving the attention needed. If the eye cannot perform its work without constantly calling for more than its share of nerve energy, it drains the vitality and deprives other parts of needed nerve-force. "Ingalls pleads for the early correction of ametropia, declaring that it is a waste of time to send a child to school when his eyes are not in proper condition to do the work assigned."³

If the vision is good we are satisfied and give the matter no further attention. We forget that the eyes may be using up an excessive amount of nerve force. "Long years of effort are made by defective eyes to perform the function of vision as perfectly as possible. When necessary, the nerve centers innervate to their utmost power the various eye muscles, causing a change of shape in the crystalline lens, stretching muscles which were too short, to enable the eyes to look in the same direction."⁴

Many of the most serious muscle defects are not manifest. The eye is held in perfect balance with no apparent irregularity. The defect is "a fixed abnormal innervation" constantly drawing from the nerve centers energy that cannot well be spared.

"The year has brought forth an avalanche of evidence to the effect that no department of preventive medicine is more important than the correction of anomalies of refraction and of muscular action. Doubt must give way before the brute force

¹ Prentice. "The Eye in its Relation to Health," p. 24

² Prentice. "The Eye in its Relation to Health," p. 40.

³ "The American Year-Book of Medicine and Surgery," 1897, p. 892.

⁴ Prentice. "The Eye in its Relation to Health," p. 10.

of such an array of facts. If permitted to continue in the child and youth, eye strain means neurasthenia in the adult."¹

Latent defects are often far more serious than those that are manifest, because they never allow the eye any rest, while manifest defects give periods of relaxation. Dr. Prentice says, "the highest state of nerve disturbance exists where the defects are absolutely latent or their manifestation reversed." This excessive eye strain "depletes the nerve centers. It also gives rise to brain irritation of varying degrees; dispositions are altered by it; character is forcibly changed."

Hyperopia is perhaps the most common defect in the eyes of young people. Its tendency to remain hidden and disclose its presence only to trained specialists makes it especially difficult to conquer.

The hyperopic eyes of children and young men and women are often unusually acute in vision. Not infrequently they see better than normal. So common is this defect that Berry maintains that "the eyes of new born infants are almost invariably hypermetropic." The frequency of hyperopia does not, however, lessen its injurious effect. Hyperopic eyes are under a continual strain from the moment they are opened in the morning until they are closed at night.² This strain is the same for distant objects as that of a normal eye at the near point. We should feel that our eyes were too severely taxed if we should read all the time and yet the hyperopic eye is under this same strain during the entire day. When reading, the hyperopic eye has to add the usual effort to the ciliary muscles, thus doubling the strain.

Slight esophoria has been relieved by the correction of hyperopia, and that dreaded disease, glaucoma, is sometimes occasioned by this same strain in the ciliary muscles.

Prentice is of the opinion that myopia "takes its origin nearly, if not always, as hypermetropia," in which the nerve impulse that corrected this defect exceeded its purpose.

If "what is termed organic disease really consists of some lesion of the parts which is the result of continued imperfect or erratic function," and "if in the true sense lesion is not disease but the result of disease," it is of vital importance that disturbing pathological conditions be remedied before they become the cause of reflex diseases through continued irritation of the nerve centers. The nice correlated action of perfect anatomical structure may be found under the most abnormal conditions, but only at a tremendous outlay of nerve force which must ultimately destroy the equilibrium of the centers.

¹ The American Year-Book of Medicine and Surgery. 1897, p. 891.

² In hyperopia and muscle trouble fixed abnormal innervation sometimes exists even during sleep.

All parts of the body are acted upon through sympathy, but just that delicate structure of the eye which renders it so sensitive to the most subdued form of energy, makes it also most susceptible to conditions within and without. One defect occasions others. We have seen this illustrated in the various derangements of the eye resulting from hyperopia. Muscle trouble is no less comprehensive in its influence. "Corneal astigmatism is almost always due to the fact that some of the muscles of the eyeball are exerting greater tension in one meridian than another."¹

Since the visual centers are the most sensitive and the most continuously active, it is of the utmost importance that they do their work with the least possible friction. Constant irritation always ends in an irritable nerve center which responds by sending out abnormal nerve impulses that end in what we call organic disease.

¹Prentice. *The Eye in its Relation to Health*, p. 152.

NUMBER AND ITS APPLICATION PSYCHOLOGICALLY CONSIDERED.

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I. THE BACKGROUND OF OUR NUMBER CONCEPT.

In the consideration of the subject now to be discussed, I propose to introduce and co-ordinate several phases and considerable work not yet found in any single treatment of the subject; to present a brief digest of the leading lines of thought on Number and Mathematics for primary and secondary schools from the pedagogical and psychological standpoint; and, lastly, to present my original investigations. Whatever merit may attach itself to this article I believe the greatest will consist in bringing together considerable material generally ignored or overlooked in treating the psychology of number, and in the *genetic treatment* of the subject. It appears that the most natural treatment will be to consider (1) the background of our number concept, (2) its development, (3) the original investigations, (4) the special application of the number concept to arithmetic, (5) the conclusion.

I will first review some experimental work which at first thought may appear to have little to do with the question under consideration, but which really underlies the whole psychology of counting. In 1868 Vierordt experimented on time-impressions from the beating of a metronome, reproducing them after the lapse of a short period. The indifference point, the length of interval more easily and accurately judged than any other above or below, was not the same for each individual, but varied between 1.5 sec. and 3.5 sec. For himself this interval was from 2.2 to 2.5 sec., when through the sense of hearing,¹ and twelve impressions could be distinguished if caught in a certain rhythm. Mach performed some experiments by the method of just perceptible differences as to the recognition of the equality of two time intervals. It was found to be most accurate at about .37 sec. and in proportion as one varied from this standard it was necessary to increase the difference between the standard and the interval for comparison in order to recognize their equality.² Kallert carried on several similar experiments in

¹ *Wundt's Phys. Psych.*, S. 781.

² *Wundt's Phys. Psych.*, S. 785.

Wundt's laboratory, where two metronomes were used; one giving off a constant series, and the other varied intervals for comparison with the standard. Experiments on seven persons for intervals from .4 to .5 sec. showed the indifference point to be between .7 and .8 sec.¹ Estel and Mehner fixed the indifference point at .71 sec., and treated of the multiplication of the indifference point.² Dietze performed some experiments to determine the greatest number of metronome beats that could be repeated, and could be recognized to be the same in the repeated as in the original series. The largest series tended to group themselves into rhythmic multiples which he thought could not be suppressed. The largest number was forty and obtained by five groups of eight each.³ Most of the experiments mentioned above were performed in Wundt's laboratory and under his directions.

Mr. Stevens published in *Mind* the result of 135 experiments on seven different individuals. "Of these, 114 point to this fundamental principle: That there is an interval of time (the value of which varies between .53 and .87 sec.) which can be reproduced with considerable accuracy; but with all other intervals an error is made, which is *plus* for those above and *minus* for those below the indifference point, the average of which was about .71 sec."⁴ The direction of the variation as stated here is directly opposite that found in all of the experiments above mentioned, but the methods were different.

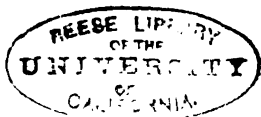
Dr. Hall and Prof. Jastrow performed a series of experiments by setting up a number of cogs following no order. One cog was put in as an *avertissement* at the most favorable interval of about .75 sec., and the observer sought to count the clicks. Each series of observations was preceded by a preparatory series of clicks which was arranged so as to exclude any considerable variation, and thereby largely eliminate the element of fatigue. After sufficient revolutions of the drum to satisfy the observer, the record was taken and another number set up. From this work it is concluded that counting objects or impressions is a very complex process, that "impressions in a series must be distinguished from each other, that from 20 to 40 beats per sec. can be distinguished by the average ear without passing into one tone, that 4 or even three clicks must be farther apart than two, that counting requires a series of innervations, if not of actual muscular contractions, and the matching or pairing of the terms in two series in consciousness; that counting is more

¹ Philosophische Studien, Bd. i, Heft. I, S. 88.

² Philosophische Studien, Bd. ii, Heft. I, S. 37; and Bd. ii, Heft. 4, S. 546.

³ Wundt's Philos. Studien, II, 362.

⁴ *Mind*, Vol. XV, p. 394.



than tallying by ones ; it is giving names to each position in a series. These names are difficult to pronounce, and some become more prominent by means of the greater time or effort they require. This in part accounts for the tendency to count with a system of accents. When the observer is behind in counting and clicks appear to be lost, he has ceased to give attention to the auditory series, having caught the *tempo* in the beginning and perceives only the innervations which expand all short intervals."¹

Dr. Nichols has made a review of the work on these lines in his article on The Psychology of Time, and concludes that nearly all persons, under nearly all conditions, find a particular length of interval more easily and accurately judged than any other, that this interval is very variable for different individuals, that the sign of the Constant Error is usually constant in both directions from the Indifference Point, that, when the norm and reproduction are single, the Constant Error is minus for intervals longer, and plus for intervals shorter than the Indifference Point, when the norm and reproductions are multiples, we have exactly the reverse.² Later, Dr. Nichols, after some very extensive experiments, asserts this same individual variation, finds the Indifference Point to be about .81 sec., and concludes that "time measurements are memories of certain most striking rhythmical, habit-inducing, and oft-occurring outer occurrences, such as particular watch or clock strokes, the varying lengths and shadows of morning, noon and night, etc."³

Dr. Nichols has lately published a small work on Our Notions of Number and Space. It is founded on a great number of tests made on the tongue, forehead, abdomen, etc., with pins in a cardboard. From two to five pins were used, arranged in lines, triangles, squares, etc. On the whole four pins were guessed more frequently than 3 or 5. "The more distinct and differentiated the separate terms of a presentation become, the more distinctly do they become numerical presentations. To formulate the genesis of numerical presentation we must determine the laws governing the simultaneous and successive combinations of separate points. The greater the number of points in any given distance the less accurate and clear these numerical presentations, and vice versa."⁴ Small numbers were over-estimated, and large ones under-estimated. "Its origin and foundation must be fundamentally placed in the following law : Presentation of Numbers, of Distance, and of

¹ *Mind*, Vol. XI, No. 41, pp. 57-61.

² *American Journal of Psychology*, Vol. III, p. 529.

³ *American Journal of Psychology*, Vol. IV, p. 107.

⁴ Our Notions of Number and Space, p. 184.

all Spatial Figures, and arrangements in general are alike based, primarily, upon serial events, differing greatly in mode, such as become characteristic of those modes of presentation which we call numerical, external and spatial, but all of them governed by the same fundamental laws of relationship. By reason of this, *all simultaneous presentations are dependent upon, and expressive of, the several modes of serial occurrence out of which, through life, they have evolved, and become differentiated.*"¹

Again, the work on Rhythm, by Dr. Bolton, will be seen to bear strongly on this subject. The preliminary part calls attention to the rhythm in the pulse, respiration, walking, speaking, attention, etc. In respiration the rhythm is about 15 to 20 minutes apart, the simplest voice utterances are primarily rhythmical. Nothing is more striking than the effect of rhythm on children and savages, and no one can avoid the moving of muscles when the rhythm is strong and clear. The instrument gave opportunity for variation in intensity at any place, and intervals of time could be made between 2, 3, 4, 5, 6 or 8 clicks. The rhythmical grouping of sounds was the same *in every case*, and the same was found by Deitze in the work to which I have already referred; and Wundt thought it impossible to *restrain* this grouping absolutely. It is done by intensifying certain sounds and subordinating others. Many say it is the same peculiar periodicity as they observe in the ticking of a clock. Others, when asked to count them, said they counted 4 or 2 as the case might be and began again. The subjects were found to be unconsciously keeping time by tapping, nodding, etc., at every second or fourth click. When movement was restrained in one muscle it was likely to appear elsewhere. These movements are the condition of rhythmical grouping. The accented sounds occupy the first place in the series and the 4-group appears to be composed of two 2-groups. "The conception of a rhythm demands a perfectly regular sequence of impressions within the limits of about 1.0 sec. and 0.1 sec." "When attention is moderate the number of clicks falling into groups vary with the rate. Slower than a certain rate no rhythm is felt. With more rapid 2 clicks form a group. Faster still, 4 clicks form a group."²

Bechterew found that with two series of strokes, of which one was larger than the other, coming simultaneously at the most favorable rate of 0.3 sec., he could distinguish a group of 18 from one of 18+1.³

Several tests have been made regarding the eye-span. "If

¹ Our Notions of Number and Space, p. 200.

² *American Journal of Psychology*, Vol. VI, pp. 145-237.

³ *James' Psychology*, Vol. I, p. 407.

you throw a handful of marbles on the floor," says Hamilton, "you will find it difficult to view at once more than six, or seven at most, without confusion, but if you group them into twos, threes, or fives, you can comprehend as many groups as you can units; because the mind considers these groups as units."¹ Prof. James says: "If a lot of dots or strokes on a piece of paper be exhibited for a moment to a person in *normal* condition, with the request that he say how many are there, he will find that they break into groups in his mind's eye, and that whilst he is analyzing and counting one group in his memory the others dissolve. In short the impression made by the dots changes rapidly into something else. In the trance-subject, on the contrary, it seems to *stick*; I find that persons in the hypnotic state easily count the dots in the mind's eye so long as they do not much exceed twenty in number."²

Jevon threw beans into a box and found that 3 and 4 were always guessed correctly, 5 correctly 102 times out of 107, and 6, 120 times out of 147.³ Mr. Cattell exposed to the eye for .01 sec. cards with short ruled lines, varying from 4 to 15 in number. With 4 or 5 no mistakes were made, but for higher numbers the tendency was to under-estimate rather than over-estimate. He tried similar experiments with letters and figures, with practically the same results.⁴

Schumann made some experiments on memory in which letters were posted at regular intervals on a revolving drum, and observed through a slit. It was observed that when any rate was attended to for sometime, any change in the rate caused errors in judgment that would not have existed had the previous adjustment not occurred. The same was found to be true with metronome beats. He thinks the sensory centers are the seat of these phenomena, that they adjust themselves to a given rhythm, and rather expect excitations at a given time. Similar errors were found in measuring by drawing the fingers along a scale by motion of the arm.⁵ Bourdon tested 100 children from 8 to 20 years old by pronouncing random figures, letters, and syllables, at the rate of 100 per minute. Ninety-four could reproduce accurately 5 figures. Six, seven, and eight were reproduced by only a few. Figures were much more easily reproduced than letters or syllables, and the power improved a little with age.⁶

¹ Lectures on Metaphysics, Lecture XIV.

² *Psychology*, Vol I, p. 407.

³ *Nature*, Vol. III, p. 281.

⁴ *Philosophische Studien*, III, 121 ff.

⁵ *Psychology of Time*, by Nichols, *American Journal of Psychology*, Vol. III, p. 522.

⁶ *Philosophique*, Aout, '94.

Dr. Bolton performed some experiments on the Memory-Span in children, by reading miscellaneous numbers about two-fifths sec. apart. He concludes that the memory-span increases with age rather than with intelligence, that for pupils of public schools it is six, and that the power of visualization plays an important part.¹

Mr. Johnson has given us the results of similar tests on Feeble-Minded Children in which it appears that some groups surpass the normal children of same age as given above by Bolton and Bourdon, but the average falls below that of normal children. The tables indicate some relation of memory-span to intelligence, yet it is so high that we cannot consider it commensurate with the degree of intelligence. They are ear-minded rather than eye-minded.²

In and back of the material that is herein presented we are to seek the proper approach to the whole subject of Numbers if we are ever to treat them in a psychological and pedagogical manner, and to throw light on the most poorly taught subject in our schools. In most treatments on this subject a mistake is made in treating it either from the standpoint of adult psychology, sometimes philosophy, or in considering a concept as having a sudden birth, rather than stages of development. That the concept makes its first appearance in consciousness with the word or language symbol that represents it is a pedagogical misconception once very prevalent, and yet assumed by many who have written on the subject of Number and Mathematics. In Dewey and McLellan's practical part of *The Psychology of Number* one would infer that they believe that the child enters school with a very low, if any, number concept.

Again there is too much tendency to treat certain concepts or ideas as having their origin wholly in a single sense; such as time to the ear, space to muscular movement, and number to the eye. Without doubt the evolution of individual concepts is the proper approach to intellectual evolution, and the concepts now so vivid to man doubtless have a long and interesting history in their development through the lower animals, and in the race, which somewhat corresponds to their continual development in the individual from the dawn to the close of life. Before we can clearly discern the fundamental character that distinguishes one concept from another we must at least consider its evolution in the individual. In most, if not all, of our concepts it will be found that different senses play an important part in their formation, that they are fed, not by a single stream, but by several, and pass through various metamorphic periods.

¹ *American Journal of Psychology*, Vol. IV, p. 363.

² PEDAGOGICAL SEMINARY, Vol. III, p. 246.

Sight plays such a dominant part in the development of the number concept that most have sought its origin in the observation of things. Dewey and McLellan assert that numbers are not obtained from things, but put into things. "The idea," they continue, "that number is to be traced to measurement and measurement back to adjustments of activity, is the key to the entire treatment of number as presented in these pages."¹ That is to say, our number concept is developed from our necessity to measure things. Civilization imposed upon us this necessity. Had they called the chapter on the *Origin of the Number Concept* the *Development of the Number Concept* it would have more nearly included the facts. But it is absurd to think of a savage attempting to measure a given quantity without any concept of numbers.

Lefevre, whose work is in many respects scholarly and unique, says: "Primary number (the early number concept) is a normal and universal creation of the human mind; it is purely the product of a rational process—an abstraction from a group of objects which represents their individual existence. The concept *one* is only in contrast with the concept *many*. The fundamental concept is prior to, prerequisite for, not derived from, counting."² To say that it is a "normal and universal creation of the human mind" is only to drop into the old way of dodging psychological difficulties. In the above quotation we have the inference that recognition of numbers in groups is the necessary stage out of which counting is developed. Most teaching of numbers is now founded on such a supposition, the falsity of which I shall speak later. Concerning the ratio or measuring idea, the *rational process*, on which both of the above works are based, I will show hereafter that such has a place, but that it is a totally different thing from the number series.

"By number," says Schubert, "we understand the result of counting or enumeration, which involves the ordinary or number sign, and the word standing for the thing counted; as five men, seven cities, and to ascend from named to unnamed numbers the notion of addition is necessary."³

This is sufficient to present the general drift of most discussions on the origin of the number concept, and before following this line further I wish to show the rudimentary stages that are prerequisite to this part of the subject, and then to co-ordinate this in its proper place. They would have done well had they not seized upon a part of the problem as the whole of it.

The first step is surely the formation of a series-idea. Changes in consciousness are continually taking place, produced

¹ Psychology of Number, p. 52.

² Number and its Algebra, p. 20.

³ *The Monist*, Notion and Definition of Number, April, 94.

by the varying impressions from all the senses. Consciousness is not one continuous impression but an innumerable multitude of successive changes. Which one of the senses plays the first and most important part in the series-idea, we are perhaps unable to determine. We cannot go as far as Preyer, who claims that the number concept is derived from the sense of hearing; or Munsterberg, who appears to derive time chiefly from the rhythmic processes of breathing; or Mark, who says that time is the result of the consciousness of continuous metabolic changes; or, like Nichols, find the origin of space and number in touch. As already stated, without doubt different senses contribute to these ideas. The tactile sense very early produces an endless series of changes in consciousness which soon become vaguely recognized as distinct both in time and space; sound continually plays its part after the first few hours of life; random noises, voices, ticking and striking of the clock, all contribute to the formation of the series-idea; the succession of night and day continues to greet the eye, objects come and go before the field of vision; hunger and satisfaction periodically occupy a place in consciousness; functional processes, especially circulation and respiration, play an important part, the movements of a child, first by others, then its own—all these, in process of time, establish firmly the series-idea which exists long before the number-name series. The earliest and most rudimentary form of knowledge in the cognitive sense is a knowledge of a series of changes. This precedes all external knowledge of things.

Since most of the foregoing experiments relate to time, the question as to what this has to do with numbers has naturally arisen. Simply because they have primarily the same origin and are fundamentally the same. Many errors arise simply because such abstract notions are considered under the form in which they occur most frequently in adult life. Although time and number may seem now quite distinct, yet these abstract notions have more in common than is usually supposed. Certain number of clock spaces or of passing events give us a time measure. The hunter or laborer depending upon measuring the distance of the sun from the horizon, is entirely lost if clouds obscure the sun. The power to measure a certain time in hours or days depends upon the power to reproduce the events that have occurred during its lapse. The aged, being unable to remember the passing events, have little sense of time. Some series of succession is the norm by which we judge time. Time is also used to express number; a day's journey once stood for a definite number of miles. Some savages use the seasons and the days of the moon to designate certain numbers. "Representing equal units, and groups of equal units, of any order

whatever, and being, as it were, created at any moment for the purpose of calculation, numerical symbols," says Spencer, "seem, at first sight, independent alike of space and time. The fact is, however, exactly the reverse."¹ "The conception of both number and motion," says Ladd, "involves both space and time."² Figures or symbols are applied indiscriminately to any series of successions. Later we shall see that some of the strange mental phenomena in the application of numbers, and perhaps the relation of geometry to other mathematics, are traceable to the fact that this series-idea, established by a series of outer existing occurrences, embody the rudiments of the time, space, and number concepts.

This series-idea, established by a multitude of successive and rhythmical sensations conveyed through the different senses, ceases to be symbolized by different touch sensations, circulation, breathing, and movements, by sounds, clock strokes, etc., by varying objects in the field of vision, and becomes a general idea applicable to any series of successions. That this series-idea is the first step, and that it becomes quite abstract, will appear evident when all of the facts are co-ordinated. Long before there is any conscious idea of number, children delight in reproducing or following a series of any kind. I have recorded 91 striking cases of this kind. Watch them throw down a given number of blocks time and time again, repeat a series of sounds; several record cases where children repeat the strokes of the clock, sometimes very accurately. A boy under two years of age rolled, one after another, ten mud balls down an incline, marking one each time until all contained a little cross. The successive nods or motions of the head that children so often go through before any attempt to count, are the same that nearly all children make in counting. Behind such activity the series-idea is manifest. But mathematical prodigies and savages furnish unmistakable proof of this early stage in the origin of our number concept. The former have the series-idea highly abstracted and developed before any names are given to the series. When Mondeux and others spent their early days in arranging and piling up pebbles, they were not forming a number concept, but simply endeavoring to symbolize the steps in the series-idea. Many of their combinations made without any knowledge of number names are astonishing. Mondeux said: "I did not know there was such a word as multiply, but I made my tables with peas and pebbles."³ He could neither read nor write, and knew no symbols such as we use, when Jacoby found him. Inaudi, whom Binet has

¹ Synthetic Philosophy, Vol. II, p. 38.

² Psychology, Descriptive and Explanatory, p. 499.

³ Scripture, *American Journal of Psychology*, Vol. IV.

examined very extensively, first used *any* words, then learned the number names from 1 to 100 from his brother, and demanded more. He was then only six.¹ Without number names he performed calculations that to most would appear wholly incredible. At the age of 3 years Gauss is said to have corrected his father who paid his servants at evening and for extra hours. Fuller, Ampère, Bidder, Mondeux, Buxton, Gauss, Whately, Colburn, and Safford learned numbers and their values before figures. Why are children so eager for number symbols? Many want the "last number," but are never satisfied with any number given. Dr. T—— says his little girl has very much annoyed them by asking for the last number. Number names neither mark the origin nor limit the number concept.

Prof. Conant says that no tribes have been discovered to be without some number concept. But it is often limited to the numbers 1 and 2, or 1, 2, and 3.² Here we have a work that is a misnomer, since it deals only with the naming of the series. No one has any right to suppose a savage tribe cannot count beyond the current words for numbers. In fact they can and do count further by the gesture language.

I now wish to show that this series-idea becomes abstract, and hence some symbols of representation are necessary. Numerical symbols must be considered as purely representative. So are the fingers, sticks, notches, pebbles, etc., of the savage and the mathematical prodigy. How many other forms of rudimentary representation there may be we cannot tell. One can easily conceive that the difference of the strain of consciousness in grasping two series, or different successions, might roughly stand as a symbol. The child that has never seen but *one* dog cannot, in any sense, have what we call the abstract idea "dog." It is only after many and different kinds have been observed that the idea ceases to represent some particular one or quality. When there is a rapid presentation of many objects belonging to a class the marks are most likely to go unnoticed and an abstract idea is unconsciously formed. Suppose no name is given to these presentations; nevertheless the idea would be gradually forming and most likely to be symbolized in its first stages of development. The abstract series-idea has a similar evolution, only much more complex, less conscious, and more highly developed. It may be well to note here that in speaking of the abstract series-idea I do not mean it in the sense in which we speak of the abstract notion of virtue or of God. But such is more in the nascent and un-

¹ *Psychologie des Grand Calculateurs*, p. 28.

² The Number Concept—its Origin and Development.

conscious period of development. It is the inheritance of latent experiences, of an infinite repetition of them, implanting the vague idea of an endless succession. It corresponds to the vague abstraction which children show in applying strange names to common objects. Succession of some kind is the earliest and most continuous thing in consciousness. Series of innervations, touches, sounds, sights, etc., are the most constant things in consciousness; one series only gives way to another. Of course we are now speaking in terms of a rudimentary consciousness, and in going back to such a stage one is most likely to carry with him his present mental habits; and, since the eye symbols are so much more convenient now, and have such an irresistible influence over our concepts, it is hard to recognize that it has ever been otherwise and that there has been a gradual substitution. Thought is carried on in substituted symbols almost to the entire exclusion of the original ones, and without recognition that they derive their meaning from other sources at an earlier period. Certainly the prevailing opinion is that the number concept is derived through the sense of sight by the observation of things, or comparison of quantity. To what serious pedagogical and psychological mistakes this may lead is readily observable.

On what other ground than that which has been presented can we explain the facts as we find them in children? Children first name the series without reference to objects of any kind. Every attempt to instruct children in numbers shows that the series-idea is highly abstract. On making a test of 39 children in the kindergarten, I found that 33 of them counted without the slightest reference to the objects to be counted, always running the series far ahead of the objects. Nearly every primary teacher I have consulted says that for sometime children count in this manner, and the same is confirmed in the 616 returns to be considered later. Three hundred and fourteen out of 341 answering this question say the series gets ahead. Of the 39 mentioned above I found that all but two could count 100, yet their teacher said she had no idea they knew any number beyond 10. "M—— knew number names long before numbers themselves, and applied them to anything indiscriminately, the number seldom agreeing with the number of objects; when she was only five she begged to be told 'all the numbers there are.'" Mathematical prodigies, as already pointed out, have the series-idea most firmly fixed, and to them it generally remains a meaningless abstraction. Again children have regard for only the rhythmical order of the number names. "Paul being asked how many puppies the next door neighbor had, replied that he had three. His father said he had four. The child said 'No,' and proceeded to count as follows: 'Tip is naught,

Bob is one, Nero is two, and Dandie is three.''' The use of naught for one is not uncommon. Have children of the kindergarten count, and you will find that they leave out difficult names and carry on the series the same, often repeating without being conscious of it. One boy asserted his ability to count 100, but in seven trials he never got beyond 69, always going back to 30. He still thought he counted 100, and appeared to have no idea that he repeated. "M—— when learning to count things or impressions would count eight, nine for one object. The number series always get ahead." "This child learned the figures in order: *i. e.*, 1, 2, 3, 4. He could tell them in this way up to forty, but if they were changed around he would not know but what it meant the same; he associated number with place or order only." "Most children I have taught," says an experienced teacher, "*will* learn the names independent of things. For sometime they do not associate them as how many of anything, but merely the name of the series." A—— writes: "I knew a little girl who was taught the figures in this way because they were easier to make: 1, 4, 7, 9, 10; afterwards, 2, 3, 5, 6, 8. For a long time the child would count 1, 4, 7, 9, 10, 2, 3, 5, 6, 8."

I cite in this connection the following statements collected from experienced teachers: D——. When the objects were beyond his counting series, R—— would look ahead, and finding this to be the case would group two or three objects as one to come out all right. F——. They use them promiscuously. Freddie counted seven sticks; when his mother changed the order, he counted them thus: 3, 4, 1, 2, 5, 6, 7. C——. In nearly all of my experience with little children I find that number names are used as names alone, and thus the third one in a series of objects will be a three to the child, no matter if it be taken from the series or not. L——. I placed little sticks before Willie and told him to touch each stick as he counted, but he was just as liable to touch three when he meant six or any other number. W——. Children learn number names as they learn other words, by hearing them repeated. They use them without knowing their respective values. They apply them promiscuously calling three objects ten as the case may be. Very frequently they have the idea that the number name belongs to the object in whatever order among others it is placed.

The early period at which children learn to count is very significant. They learn to name the series and follow it before they learn letters, to read, or to write. Out of over 1,100 persons, 90% are sure that they learned to count first. The supervisor of one of the large normal kindergartens writes as follows: "The tiniest children in our lowest room could count perfectly as far as eight, giving the names in order, and pro-

nouncing perfectly after the first three or four weeks in school. I was surprised, for I knew that most of these sounds were not associated with any idea of number. I was curious to find out the reason for this occurrence and soon came upon it. The girl teaching in the room counted for gymnastics. The great enjoyment which these little people took in those eight words suggested to me that perhaps it was not so wrong as we have been told to teach children counting. The smaller children often carry on this counting to themselves after being seated, counting over and over. From the movement of their lips I can see that the charm is still upon them." This same delight is manifested until children are 8 or 10 years old.

A passion for counting when children first learn to follow the series is very common; 131 cases are reported, many of which are very interesting. J——. A little girl of seven years seemed to have an absorbing passion for counting everything. One day when at the Township Fair she counted all the chickens. She was once sent on an errand with the injunction to hurry. On the way home she walked on the railroad track and counted the ties. When half way home she forgot the number, so retraced her steps a half mile, and counted them again. M——. Lucy, 6 yrs., having been turning the leaves of a new copy of Webster's International Dictionary, turned to me saying—"This dictionary has — pages." I noticed that she read the number of the last page correctly. "Well, Lucy, how many leaves has the dictionary?" Her answer was a little laugh and "O, don't know, a great many. There are over a thousand." My approval delighted her, and she told me of her self-imposed task of counting a million. "I have counted to seventy thousand." "You have?" "Yes, I am counting a million." "How long will it take you?" "O, I don't believe I ever can, it will take such a long time. I have been counting a long time," she said. An older sister of whom I inquired, thought that she had been counting for nearly a year. In several schools which I have visited, teachers have departed from their usual way of teaching by blocks, etc., just to show what a delight children take in counting. Why is this series named so early? Why such delight in counting? Why should these words be sought and caught so readily? The abstract series is behind it. The child is only keeping up the various activities of following an indefinite series in the various ways before mentioned, by a more convenient series of symbols. But the old signs are not lost at first.

A movement of some muscle, as the toe or finger, or nodding of the head, can be observed in nearly all children when counting at first. In fact many adults consciously or unconsciously do so.

J——. When I was small I always used my fingers to count.

In fact am inclined to do it still, so strong is the habit. When the teacher forbade it I used my toes, moving them inside my shoes sometimes; at other times I remember producing a little sound in my throat as a counter. Again, when alone, I was addicted to tapping my fingers in succession. When I wished to remember I always counted off on my fingers in some way that it would be clearly stamped upon my mind. G——. Have seen children who were forbidden to count on their fingers make pressures upon their legs and sides with fingers or elbows. A——. Used to tally with my little finger, but not allowed to do this, I tallied by rubbing two of my back teeth. F——. When counting I tap one foot against the other for every count. L——. When 14 years old was greatly embarrassed upon finding all the boys in school laughing at me. Upon investigation, found that while doing an example I counted everything up on my fingers. This revealed a habit which I was entirely unconscious of. D——. In adding numbers greater than three I would always nod my head first toward one side then the other. I stopped that, for a long time I would think of nodding, but not really do so. In Bolton's work on counting clicks the subjects nodded or moved some muscle. If suppressed in one muscle it was likely to appear in another.

The fact that, at least nearly all children, no matter how taught, first learn to count independently of objects, in which the series-idea gets ahead, that they recognize three or four objects at first as individuals, calling the fourth one four even when set aside by itself, that counting proceeds independently of the order of number names, and often consists in a repetition of a few names as a means of following the series, that children early desire and learn these names; such, taken with the earlier steps presented, furnish unmistakable evidence that the series-idea has become an abstract concept. This is an important fact, the full significance of which will become manifest later.

Before passing to the next step, which is the naming of the series, let us call attention to certain rhythmical processes that must not be ignored, and which all the experiments on counting clicks, etc., show. Whatever fault may be found with these experiments it is evident that there is a favorable rate above and below which error is much more frequent, that it varies somewhat in different individuals and for the different senses, that the multiples are of great importance, that certain grouping is hard to avoid, and that accenting of certain numbers in the series and varying of the rate tend to modify the groups. Again circulation, respiration, etc., are not only continuous series processes, but each has a rhythm of its own. Then the countless modifications of compound rhythms, both organic and locomo-

tive, whose effect may be only dimly perceptible, are never absent and their continual presence may produce an unexpected effect. In listening to the tick of a clock, or any continuous sequence of the kind, we divide it into groups. Several report cases where children have inquired why some "ticks" were longer than others. Number is not the result of any one of these units of consciousness, or rhythmical processes, nor of all of them. They are only a part that contribute to the series—idea; but what they especially do is to stamp, as it were, certain numbers of the series, and give them a dominance over the others.

In all of the returns nothing is more common than the preference children and adults give to certain numbers. Again this preference is often unconsciously manifested. Out of 600 returns Dr. Lancaster observed a decided preference for 18. Many will not give their age, or any other number correctly if it fall on certain ones of the series. There are certain numbers of the series we unconsciously avoid thinking in. Odd numbers are generally disliked. Miss D—— has a passion for counting everything to find whether it is even or odd, and is displeased if it is found to be odd. I have before me over 100 expressions similar to the following: "Odd numbers always cause a kind of shrinking, as though some obstacle had arisen, while with even numbers comes a satisfied feeling." "The odd numbers seem to me to have something uncanny about them, and to be of less consequence, fullness, and beauty than the even numbers." Mrs. G—— cannot endure having an odd number of anything in the house. Why do merchants price goods \$.29, \$.47, \$.99, etc.? Evidently there is some psychology of number here which is turned to their advantage. We are accustomed, as we say, to think in "round numbers." They appear to be marked "close"; but why should \$.47 appear "closer" than \$.45? A merchant told me he had sold more of the same article when marked 47 cts. than when marked 45 cts. Cases of dislike for some numbers could be mentioned almost indefinitely where no reason can be observed. Dr. Brown, in relating the incident of the extraordinary precocious girl Marjorie Fleming, gives the following as one of her sayings; "I am now going to tell you the most horrible and wretched plague, the most devilish thing is 8 times 8 and 7 times 7; it is what nature cannot endure." Four is everywhere a favorite number. It is the most important factor in Hindoo arithmetic, all figures and fractions being built upon multiples and fractions of it.¹ Perhaps ten and its multiple stand next, then there is a great variety of choices. I have found nothing to indicate the existence of a number system

¹ Hindoo Arithmetic, Science, Vol. XXV, p. 254.

founded on 6, 7, 8, or 9. Although 12 contains within itself the greatest advantages as a base, it has never been found among savages; notwithstanding civilization has attempted to substitute it for the decimal system, yet it is not likely to prevail. Such is the persistency given to the original system of counting on fingers.

The force of the rhythmical processes may be observed in children's counting, even when counting by 2's, 4's, 5's, etc., which they so much like to do; the rhythm is often very marked, as 5, 10, 15, 20, 25, 30, or 2, 4, 6, 8, 10, 12, etc. Exactly in what order and in what manner these special units of the senses, and rhythmical functions modify the series-idea we do not know, but all observations and experiments tend to show that they do. As I have already pointed out, the compounding of various elements of consciousness in early life, eventually merges into what seems unlike any one of them, yet when such mental activity is analyzed it yields its original component parts.

Let us now consider more fully the naming of the series, several points of which have been mentioned. The naming of the series generally goes in advance of its application to things, and the tendency of modern pedagogy has been to reverse this. This is founded on the false conception that the number concept originates from the observation of things, and the development of number names among savages is sometimes pointed out as proof, but the widely different conditions make such proof of little value. Civilized people have the names to apply to the abstract series, but the savage must invent names or symbols to represent an abstraction that must otherwise remain unexpressed. The fact that the concept is always in advance of the power to name shows that naming is only symbolizing it by means of a corresponding number of things. A few tribes have no word for even one. The Chequitos of Bolivia have none, and use *etama*, meaning alone. Tacanas have only what they borrowed from the Spanish. In the Gudang district only two numerals are used. The original inhabitants of Victoria had no numerals above two, yet they counted, and even recorded the days of the moon. For many years in India "moon" was used for one; "eye," "wing," or "arm," for two; veda, "age," or "ocean," for four, because they considered four oceans; "season," for six, because they recognized six seasons; but here we see the idea of a recurring series of time must have preceded. A tribe in Australia and some of the Malay race, give names to their children in order of their birth, thus forming a number system extending to nine. The terminations are slightly changed for the girls. I have been told of a district

in the U. S. where parents simply number their children according to birth. The moment any series of words is arranged in order in our mind, it becomes a counting machine.¹

Whewell held that 2 and 2 make 4 is a necessary truth beyond what experience can give. It appears, however, that no such an assumption is necessary, when the concept is fully analyzed. That some number names are among the earliest forms in all languages only strengthens what I have said concerning the very early and in many ways unconscious origin of the series-idea. The use of the names of surrounding objects for numbers among savages gives no evidence that these ideas were derived from *such* objects. Such is but the endeavor of the mind to symbolize ideas gradually evolved as before indicated. The many words which children coin for their own use are not mere babblings, but represent ideas which seek some mode of representation. The adult will frequently fail to see any relation between the name and the object to which it is applied. When a child calls water "guga" and persists in the use of this word for two or three years, it evidently puts into such a word something not conveyed by the general name of the object. For example, a child calls water-melon "bum-bum." Evidently the leading idea conveyed by this word is the thumping common in testing the ripeness of the melon.

In all primitive counting the gesture or sign language comes first. Ah, ah, ah, ah, ah, etc., are natural number words now represented by human machines—striking of clocks, etc. In Livy we read that a nail was driven into the wall of Minerva each year to record its age. The finger method seems to have been the most universal and lasting of all primitive means of counting. Hence the almost universal use of the decimal system, notwithstanding the superior advantages of the duodecimal system, also the prominence given to ten and its multiples. Nearly two-thirds of all number-forms make their first turn at ten, and those that do not almost always do so after reaching the multiples of ten. Sometimes the counting is continued on the toes to twenty and then a man stands for twenty. Most races count to 10, but the exceptions are varied and many. Counting by sticks, pebbles, notches, etc., is second. The Egyptians used simple strokes up to 10, and for the 10's special symbols were used. A simple stroke, pebble, or notch elsewhere can represent 10, 20, or 100. Traces of the same system are found in the system of *tallying* at games, etc. In several instances the numbers from 1 to 9 have been represented by the first letters of the alphabet, the 10's by the next nine letters. Again multiplication found an express-

¹Tylor's Primitive Culture, Vol. I, p. 258.

ion by dots over the letters somewhat as we represent variations in vowel sounds. $a = 1$, $\dot{a} = 10$, $\ddot{a} = 100$; $o = 8$, $\dot{o} = 80$, etc. This system was used by the Greeks to 10,000. The Chinese never write 245, but 2-100 4-105. A system of bars separating each order of the number was once common in Europe.¹ Concerning the significance given to symbols and the relation of the number concept to intelligence I will have occasion to discuss later.

This is essentially the counting period, and any words that can be arranged into a series furnish all that is necessary. *Counting is fundamental, and counting that is spontaneous, free from sensible observation, and from the strain of reason.* A study of these original methods shows that multiplication was developed out of counting, and not from addition as nearly all text books treat it. Multiplication is counting. When children count by 4's, etc., they accent the same as counting in gymnastics or music. When a child now counts on its fingers it simply reproduces a stage in the growth of the civilization of all nations.

I would emphasize again that during the counting period there is a somewhat spontaneous development of the number series-idea which Preyer has discussed in his *Arithmogenesis*; that an immense momentum is given by a systematic series of names; and that these names are generally first learned and applied to objects later. A lady teacher told me that the Superintendent did not wish the teachers to allow the children to count on their fingers, but she failed to see why counting with horse-chestnuts was any better. Her children could hardly avoid using their fingers in counting other objects yet they followed the series to 100 without hesitation or reference to their fingers. This spontaneous counting period, or naming and following the series, should precede its application to objects.

Mathematical prodigies exemplify this period in the highest degree, and in fact it is to this period of mathematical development that they belong. A true theory or presentation of numbers should co-ordinate all such material, but none of our systematic treatments have considered Number-forms, Individualization, or Dramatization, of numbers, Passion for counting, Mathematical prodigies, etc.; in fact the theories exclude any consideration of these facts as well as all the experimental work set forth in the beginning.

Take from the mathematical prodigy the power to manipulate the series in the four operations of Addition, Subtraction, Multiplication, and Division, and you have nothing worthy of attention. They seldom ever make a practical application of

¹ Number Systems by Conant, PEDAGOGICAL SEMINARY, Vol. II, p. 51.

their power to things or to business, but, carried away with the delight of counting, they remain in an exaggerated development of this mathematical period. In general they, at least, appear stupid, inactive, having little knowledge of, or interest in, any thing except their ability to make rapid combinations in the abstract series. Gauss presents the greatest exception to this statement, yet his power greatly declined. In spite of opportunity for improvement Colburn, Dase, and Mondeaux's talents disappeared. Precocity in calculation commonly appears between the age of 3 and 10 years. Not only do mathematical prodigies belong to the counting period, but we find this period prolonged and highly developed in many who have never attracted attention. Many have a passion for counting which they feel compelled to satisfy. In Messrs. Lindley and Partridge's work on Mental Automatism, 81.3% of 495 cases, have counting habits. Some count anything that appeals to the senses, such as telegraph poles, strokes of a bell, ticks of a clock, etc.; some count by "one, two," "one, two," and so on.¹ Some feel troubled if they fail to count all of the desired objects. Riding on cars seems to be most favorable to counting. Perhaps this is due partly to a rhythmical tendency, to the strong presentation of rapid succession; and to states of revery in which the centers are allowed to respond freely to the various series of changes. Mere abstract following of the names of the series is indulged in with great delight by 131 of the 616 returns now before me, and 23 frequently count themselves to sleep. Again counting is often indulged in unconsciously. Just as I have pointed out in a previous article that there are all degrees of number-forms from the most highly complex and elaborate, even of three dimension, to the simple fact that, at least 90% of all children conceive numbers as taking some direction, and nearly all adults have a similar feeling, or conceive large numbers as being "far away"; so the counting period in which all children find pleasure, and indulge to some degree when symbols are furnished, seems to be quite indefinite; but undoubtedly this period is the genesis of such mental phenomena as just described of which the mathematical prodigy is the highest embodiment.

In my article on the genesis of Number-forms I tried to show that such originate during the period in which the series-idea is being named or the period of spontaneous counting. While the abstract series-idea is being named it is represented by a series of muscular movements as seen in children's counting, but in most cases these muscular movements are suppressed, or partly so at least, before the series is well applied to things, and

¹ PEDAGOGICAL SEMINARY, Vol. V, p. 41.

hence we may expect to find some mental movement corresponding to these muscular movements. The mind struggles to symbolize the series in some way, and on the intellectual side we have some idea of movement given to numbers. This movement may be a mere idea of a vague, indefinite extension in space, or it may become quite definite, complex, fixed, and vivid. It appears then that number-forms have their inception mainly before the series-idea is applied to things, are due to the abstract nature of the series-idea, to suppressed muscular movements and to the long period of development in which the ideas of time, space, and series or number, were so vaguely separated, and of which number-forms stand as a proof.

Much has been said of late about the relation of geometry and numbers. And the tendency is to introduce a kind of "eye-geometry" along with numbers. Even Sylvester said in his address to the British Association: "Whenever I go deep enough I touch a geometrical bottom." If such a relation is shown to exist and has any value it is to be found in the relation of the space concept and the series concept in their nascent state, and the value of such a relation is determined by the degree of dependence yet existing.

II. THE APPLICATION OF THE SERIES TO THINGS AND IMPRESSIONS.

The two steps already considered are the long and gradual formation and development of the series-idea established by an infinite succession of changes produced in consciousness from the beginning of conscious life, and the development of symbols or names representing a series of successions otherwise variously expressed. We have seen that the spontaneity of this period is so great that as soon as any words are arranged in order they are used as a counting machine, and that certain mathematical phenomena that have not, and cannot be co-ordinated in any other treatment, belong here. It next remains to show how these symbols are applied to objects and impressions. Seeing how readily and easily every child learns to count or follow the series even to 100, every teacher and observer must be convinced that its application is the most conscious and difficult step yet reached.

At first the individual thing stands for the number. Two hundred and ninety-two cases are given where children count objects; as four people, and although all except one may have disappeared, yet if this be the last named it is still called four. In counting chairs, etc., no collection is recognized for some time. Dogs, chickens, etc., are often counted, each standing for a number and not as a part of a quantity, just as the case already cited where the boy recognized four dogs, Tip as

"naught," etc. Many cases of this kind occur in the early counting of children and among savages. Without doubt some of the strange psychological phenomena sometimes called dramatization and individualization of numbers, in which the numbers, sometimes to 20 or more, are invariably associated with, and thought of, as some object or person, finds a satisfactory explanation at this point. Four is a fat duck, 7 a tall man, 8 a pale faced woman, etc. P——. Five is a pig tail, 4 a box, 7 a tall woman, 9 a lazy man, 11 a pair of match horses. S——. I always thought of 7 as my crippled father (one legged), and 8 as my grandmother, and 9 as my tall grandfather. Now it is very natural that the child that called his neighbor's dogs naught, one, two, three, if this association be kept up, will later modify the objects associated with these numbers in accordance with the ease or difficulty in using these numbers. Three may become a mean troublesome dog; two a good puppy trying to make things even; naught an indifferent, easy-going fellow. While I have no direct evidence of this, yet it seems a very natural step in association and a plausible explanation. It further appears that the object is dropped later, or an association based only on some operation in the use of numbers arises. Two is simply a good little figure, 7 is a bad number, 3 is mean and cheats others, 11 is a happy, go-lucky individual, 13 is mean like 3; 25 is a square, round-faced fellow, etc. Then we have a few cases where numbers seem to carry on a continual combat for certain places: thus, 7 tries to get into 14, but is crowded out by 2; it then makes an effort for 28 or 35, but being crowded out, after much difficulty gets into 49, and so on with the various numbers. F——. Four seems disagreeable and devilish, because it turns its back upon every number into which it is put. A child of 6 yrs. says 9 is cranky and you cannot divide it into 2's at all. B——. The figure 4 always seemed so staid and firm to me, until I was told by a teacher that one of his pupils said that she always made the figure 4 to waltz time, and ever since then it has stood apart claiming an air of its own.

While such exceptional cases may seem entirely beyond the explanation given for the simpler forms, yet it is better to seek their explanation in some association in early steps in the development of number than to treat such as entirely outside the ordinary laws of association.

In the application of the series to things is where the child first encounters much difficulty, and this is much increased because the teacher not apprehending the full importance of this step tries to hurry the child over this point entirely too rapidly. It is here that we meet with so many systems and devices for teaching numbers.

It seems necessary, then, that we should first consider the quan-

titative rational-idea of numbers, held by Dewey & McLellan, Graham, Speer, and Lefevre, to which reference has already been made. This is entirely different from the series-idea which has so far been under consideration. It is a reasoning process to which the series-idea is applied. The eye-span and ear-span, a summary of which has been given, in so far as they are purely such, are but quantitative relations of groups. In the case of the eye-span where we find the purest, if not the only, examples, in its last analysis, it is the simple recognition of a form. Many cases are reported where animals seem to have a high sense of numbers, such as various fowls that recognize the number of eggs, animals that recognize the number of young, or pigs, sometimes exhibited in shows, capable of playing cards. When a boy, I remember, a turkey hen that always quit her nest if a single egg was removed, even when the nest contained 7 or 8; but after sometime I found she could be thoroughly deceived by removing 3 and putting in 4 hen eggs. It was only necessary to make the general bulk or form appear the same. Such will be found to be the case with most of such examples. The card-playing pig simply recognizes a form, as may be observed by any one who will analyze their own mental operation in playing a game of cards. In order to make clearer the difference between the series-idea and this quantitative rational-idea, I wish to state some observations made on children. In one of the large kindergartens I observed the children giving the combinations of eight. The lesson was conducted with 8 two-inch cubes by separating them into various combinations. The results were given by the children as if it were an instantaneous recognition of so many numbers. I then asked if other objects could be obtained, and tests were made with various other larger and smaller forms, and objects taken from my pockets; but in every test it was evident that counting was the only guide if any accuracy was reached. Such tests were applied in four different schools to 65 children learning the combinations of 10. The result was such as to make it evident that in most cases the combinations and relations so readily recognized were more a matter of form than of number, and that individual enumeration was resorted to whenever any doubt existed. Again the same thing was found even in a more marked degree when tests were made by presenting dots to the eye. One teacher presented to her children five dots in nine different arrangements and in every case they were obliged to learn the form before the number could be recognized as five without counting. The same thing is found wherever such tests are made. One teacher states that after teaching the numbers for sometime by dots arranged on cards, she accidentally put some of the numbers on the board in a different arrangement, and

was astonished to find a hesitancy in recognizing them. She then for the first time realized that she had been teaching form rather than number. It is fully believed that a close analysis will show many of the above results on the eye-span and ear-span to be only the recognition of form, or that the result is obtained by rapid counting and grouping, which, occurring so often and so rapidly, gives no conscious mental activity unless special attention is paid to the operation. There are many cases where a judgment is immediately given, apparently without any reflection, and such have been counted *instinctive*; but close attention to such mental states reveals even to the individual the steps by which such a judgment was formed.

Mr. Speer's Primary Arithmetic is founded on the assumption that the end of arithmetic teaching is to induce judgments of relative magnitudes. It is rather curious how much quantitative judgments are insisted upon. The Dewey and McLellan idea is very much emphasized, and to the entire exclusion of any other side. Here we have a logical process of reasoning insisted upon to which the series-idea is applied. "Reasoning in arithmetic establishes equality of relations, reasoning in any subject equality or likeness of relations"¹ By what authority can we make the science of numbers co-extensive with all reasoning? Number in its genesis is independent of any, or all, quantity, and the science of numbers is essentially the relation of one number in the series-idea to another. That some form of the series-idea may be applied to all, or at least, most processes of reasoning, I admit, but that is quite a different thing.

Dewey and McLellan, with those already mentioned, holding the same rational-idea, fail to see that there are two sides to the application of the series to things, the logical analysis to which the series is applied and a more general comprehension and application of the series-idea. We are told that, "It requires considerable power of intellectual abstraction even to count three,"² that "the manifestation of the conscious tendency in a child to count coincides then with the awakening in his mind of the conscious power of abstraction and generalization. This also indicates discrimination and relation."³ The truth of such statements can be maintained only by giving counting a false or philosophic meaning not sustained by any of the facts connected with counting. It is a capital error leading to the worst pedagogical blunder to suppose that abstraction and generalization go hand in hand with counting, or to suppose that

¹ Primary Arithmetic, p. 35.

² Dewey and McLellan's Psychology of Number, p. 25.

³ Dewey and McLellan's Psychology of Number, p. 27.

number has any such meaning. Counting chairs, tallying by beats, etc., are no signs of abstraction and generalization, neither is the power to manipulate the series in the four fundamental relations any sign of such. I have found many children whose number sense was very highly developed, yet very inferior to other children in the power of abstraction and generalization. If this were true, the general intelligence of savage races should go hand in hand with the development of their number concept, but the exceptions are so many and so varied that no one can draw any such a conclusion. Take from the mathematical prodigy the power to *count* and manipulate the relations of the series, and as a rule you have little of any kind of intelligence remaining. They are noted for their general stupidity in other lines. Every one who has lived among the negroes knows how much their number concept is in advance of their general intelligence. They are generally unable to read or write, or to form any abstraction or generalization, but never unable to count and in many cases to perform astonishing calculations. Take Thomas Fuller, the African slave, who died at the age of 80, never having learned to read nor write, and was of very low intelligence, yet his arithmetical calculations are among the wonders of mental phenomena. This philosophical theory is not wide enough to cover all the facts. The rational-idea is but a part of the philosophy of number and takes in but one part of the application of the series-idea.

In what does the comparison of two quantities differ from the comparison of two leaves? "Quantity is limited quality, and there is no quantity save where there is certain qualitative whole or limitation."¹ To carry out their quantitative rational-idea, and make number the "rational process" desired is to identify number with all reason. The application of the series-idea to the logical processes of reason no more makes them identical than the giving of motion to a ball makes the ball and the motion identical. Some maintain that mathematical reasoning is different from other reasoning; but there is still a wide difference between the reasoning involved in the fundamental operations with the number-series, and mathematics taken as a whole. This philosophy not only ignores any such difference, but any other that might exist. "*Reasoning in arithmetic establishes equality of relations, reasoning in any subject equality or likeness of relations.*" It is true that "all relation is a result of comparison," and we can hardly conceive reasoning that does not involve comparison in some way, and even an application of the series-idea, either definitely expressed or more or less distinctly understood. When a child asserts two leaves to be

¹ Psychology of Number, p. 57.

alike or unlike there may be involved a geometrical comparison and a comparison of the intensity of color; but there is no expression of such on the part of the child, and it is greatly extending the idea of number to call it arithmetic. Even granting there is no strict line of demarcation either between reasoning in general and mathematical reasoning, or between general mathematical reasoning and the simple operations with numbers; yet there are certain marked stages of development and application that no one will think of identifying.

This application of numbers is the latest and most difficult step, and no attempt should be made to push it on the child before the proper time. The most general use of the series does not involve this comprehension and application of numbers. If drill, for the logical reason be the aim, such an application of the series at the proper age is, without doubt, of utmost value; but having seen an advocate of the rational-idea labor long and hard with no result but confusion on the part of the pupils, I am convinced that it is a step demanding considerable abstraction and generalization, and of a nature not found in the more general or common applications of the series, such as made in ordinary counting and calculation.

III. RESULTS OF SOME ORIGINAL INVESTIGATION.¹

This part of the subject will include (1) the examination of 616 returns on the syllabus on Number and Mathematics, (2) the result of 2,043 papers on numbers and arithmetic, collected from the first to the ninth grade inclusive.

The following syllabus was issued :

NUMBER AND MATHEMATICS.

I. PSYCHOLOGICAL AND ANTHROPOLOGICAL.

(a) State cases where animals, or children who could not count, have distinguished, *more or less*, objects, as eggs, young, toys, etc. How fine was this discrimination, how shown, and other details?

(b) Describe games of instantaneous guessing of the number of objects in a group, noises in a series, inches, feet or rods in a given distance, surfaces, angles, etc.

(c) Describe cases of tallying by beats or counters, before counting, or before number names are known.

¹ See also Genesis of Number Forms, *American Journal of Psychology*, Vol. VIII, pp. 506-527.

(d) How do children learn number names, and how use them, what changes of order, errors in learning to count things; does the object series or the number series get ahead? Describe fully cases where counting became a passion, and everything must be counted, also cases of school children who use fingers, move toes, nod, etc., or use other counters.

(e) Errors and order in learning figures, making or applying them. Do the figure forms have any moral or personal character, as: 8 looks happy, 7 cross, 4 solid, etc.? Report fully when such associations exist. How different do Arabic and Roman numeral forms seem?

(f) Cases of number forms, *e. g.*, the first 12 numbers being habitually associated with a dial or clock face, the first ten on a line, straight or curved, systems of dots, colors, etc. Do odd seem to you different from even numbers? Draw any number forms. How do you arrange days of the week or month, the musical scale?

(g) Cases of "eye geometry," or automatic puzzling over patterns of carpet, wall paper, bricks on sidewalks, strong fondness for tracing the forms of decorative ornamentation, spontaneous drawing of such patterns or development of them in the use of kindergarten material.

(h) Cases of children exceptionally forward in or fond of mathematics and those exceptionally backward. Describe any physical or mental peculiarities of such children, their other tastes and aversions, and account for this peculiarity. Especially, if you have a prodigy, try to find out just *how* (by what process) each cardinal operation is done; the same of dullards.

(i) Describe any rare case of pupils who associate number processes with personal acts or dispositions, as *e. g.*, four is peaceable, and dwells tranquilly with eight, but with seven it feels and acts out enmity, etc.

(j) Ask children of each grade what part of the year's mathematics they like best and least, and why, letting those of upper grammar and high school grades write out their answers.

(k) What figures or numbers give you, as well as your pupils, most trouble in adding or multiplying?

II. PEDAGOGICAL. A. ELEMENTARY.

(a) Please state how you would teach beginners. Describe your special methods with any phase of the work. Special drills.

(b) What mistakes are most common in—1, notation; 2, numeration; 3, adding (oral and mental); 4, subtracting; 5, multiplying; 6, division; are these more or less if special accuracy is attempted?

(c) If you have tried (1) the Grube method, state its chief

merit and defect, (2) the same of Colburn, or much *mental* arithmetic.

(d) When would you begin fractions, and briefly outline your method of (1) beginning, and (2) of teaching common denominator, etc.

(e) Should more intensive methods, a larger or less proportion of time, more mechanical drill of both memory and slate, and less rules and explanations be advised?

(f) Or is this pure form work, abstract and obsolete, and far from the pupil's experience, the traditional application to *values* too commercializing, and should the number relations grow out of observation, facts in zoölogy, botany, physics, astronomy, etc.?

(g) What illustrative or other apparatus would you use for each stage thus far? 1, How long should, *e. g.*, four be illustrated by four girls, tops, apples, etc., before the child understands that it can apply to anything? Would you use any form of abacus, or Russian counters, and if so what, how and how long? Value of associating, *e. g.*, 1, with unicorn; 2, with an ox; 3, with a trefoil; 4, with a quadruped; 5, with a star; 6, an insect, etc.; also value of jointed figure, *e. g.*, 8 joints in the figure 8, etc. Value of toy money, divided spheres, jointed rods, etc., for fractions. Do the marketing, shopping or trading stories, as a setting or motive for the pure number relations, help or hinder; and how, why, instances? Do you know any rhymes, songs, puzzles, or games or any other device that may help some? What charts, or diagrams, or black-board pictures are helpful?

B. HIGHER ARITHMETIC.

(a) Of 1, proportion; 2, percentage; 3, roots and powers; which should come first and which last, and briefly, *how would you begin and proceed with each?*

(b) What should be the place of weights, measures, moneys?

(c) Of the business application of the science of pure number relations, as interest and partial payments, exchange and bills, commission and brokerage, banking, taxes, bonds, annuities, or of their application to science, as in mensuration, surveying, longitude and time, geography, astronomy, physics, etc. Which is most important? Which logically first and last, and how would you teach each?

(d) What apparatus would you advise for upper grammar and high school mathematics, as slates, globes, drawing instruments with verniers, cube root blocks, theodolite, weights and measures, graphic methods and charts, etc., etc.

(e) Name the best text book or books, in your judgment, with the ground of your preference.

C. GEOMETRY AND ALGEBRA, ETC.

(a) At what point in arithmetic should geometry be begun and how, and how co-ordinated with arithmetic and algebra?

(b) Name best text book and method for beginners. How far, and if at all how should geometry be based—measurement, drawing, or the data of astronomy or physics?

(c) At what point should algebra begin and how?

(d) Should it be taught abstractly and formally at first or concretely, and if the latter, on what basis? Name best method and text books for beginners.

(e) At what stage of progress, or at what grade or age, would you begin trigonometry? Name best method and text book. How would you connect it with previous mathematical work, and what practical work, observation or experience would you make use of?

(f) At what stage of progress, grade and age would you begin calculus and how? Name best method and text book for beginners. How would you connect this work with (a) previous work, and (b) informal observation and experience?

Something over 800 returns were received, but nearly 200 were found of little value in any way. Nearly all of the returns relate only to the first part of the syllabus, however, about 100 have something to say on the second part, and 13 papers treat it extensively.

Of the 616 reporting on the first part, 235 are men, 319 women, 62 do not designate sex. No further attention is given to sex, since there is no difference of any note in the returns. Seventy-two per cent. are teachers; forty per cent. have taught over five years.

Animals, or Children who could not Count, Distinguished, More or Less, Objects, etc. One hundred and thirty-five cases were reported for children; 170 for animals, the nature of which may be seen from the following: G——. A cat with 3 kittens will miss 1 even before they are a day old. R——. Bob used to bring 5 cows; if 1 were missing, would, of his own accord, go back after it. F——. Our guinea always leaves her nest if a single egg is removed. Have tried her time and time again. D——. I have a dog that can count 5. He will bark once if you hold out 1 finger, twice for 2, and so on to 5; he will bark for sticks in the same manner. M——. Bruce, our dog, used to bring the hogs out of the meadow. When in the lot, he would look them over, and, if any were missing, would go back. M——. Thomas, 32, cannot count above 10, yet he can

split rails by the hundred and know just how much he has made. H——. I knew a boy, 4, who could play casino before he could count 10. He seemed to know the value of the cards by the arrangement of the spots. C——. Willie, only 3, had 7 blocks with which he played. I took away 2; he observed no difference until he attempted to put them in the usual form. He then cried, saying some one had taken his block; returning 1 did not satisfy him.

These examples are sufficient to make clear the general replies to this question. It will be seen at once that the difficulty encountered here is to determine when it is *form* and when it is *number* that is recognized. That animals have some number sense both as a succession and as a relation between magnitudes cannot well be denied, but, as I have already pointed out, much that passes as such is only the recognition of an individual form; and this is certainly true in nine-tenths of the cases given for both animals and children.

Games of Instantaneous Guessing of the Number of Objects in a Group, Noises in a Series, etc. Two hundred and twenty-six cases are given, and 73 different games. Much under this heading bears a close relation to some of the returns on Mental Automatism,¹ and in some respects to Dr. Lindley's Puzzle Interest. However, he finds guess-games and riddle-making to begin about 3, and culminate from 5 to 8.² Only 59 in my returns mention the age of guess-games, and it is generally placed between 6 and 10.

Of Tallying by Beats before Number Names are learned, 91 cases are given. H——. Fred will stand by the window and tally as the rain-drops fall. C——. Eddie, only 2, often repeats the strokes of the clock. F——. When I was about 3 I tapped my finger as the rain-drops fell. Also sorted a collection of pictures, making a mark for each one put aside. H——. B., 4, keeps tally by closing one finger as the clock strikes, etc., also by shaking his head when the piano is played. D——. F., 3, was playing "farm;" every now and then he put a stick up the water pipe. E. asked him why he did this. He said: "They will tell me how many times I go to mill." H——. Children follow the series in various ways, sometime before the names are given. F——. A boy, 5, will arrange piles of sticks of different sizes, and then lay aside one larger stick for each of the different piles.

On Learning Number Names, 341 give a definite answer; 314 say that children learn them by rote as abstract words; 27,

¹ Lindley and Partridge, PEDAGOGICAL SEMINARY, Vol. V.

² A Study of Puzzles, *American Journal of Psychology*, Vol. VIII, p. 450.

from objects. This is one of the most important topics discussed in the returns. Several cases have already been given in the first part of this article, and only a few need be added here. P——. Children learn number names by imitation or by hearing them used, sometime before they know how to apply them. D——. C. could count 100 long before she could recognize 6 or even 4 objects. M——. They learn number names by hearing them and use them promiscuously, calling objects by number names. It is astonishing how readily, and how many children learn number names even to 100 while they have a very limited knowledge of their application.

The Application of the Series formed another very interesting topic to which there were 329 answers; 292 may be classed as cases where they apply them indiscriminately; 37 to objects. Some of the 37 do not seem to understand what is desired. They speak of children applying them to objects, and then state that children designate objects according to their order in the series wherever they may be placed. Practically all substantiate the fact that children apply number names indiscriminately or promiscuously. In this connection are found some of the most important facts for pedagogical treatment or teaching of numbers. R——. C., 2, always uses 2 for everything, if he sees 5 birds he will say "2." H——. When L. was 3 he would press the piano keys and say: "1 key, 4 keys, 8 keys," etc. I have often observed him counting to himself, saying, "1, 5, 8, 10, 20, 3, 9," etc. S——. Sarah will often put blocks in a pile by 2's and count only by ones. M——. Sometimes I have my children count objects they can handle, and, if they have any idea of how many to expect, when the series number begins to get ahead, they will put over two or more at a time.

I am indebted to Miss Shinn for a very accurate, extensive, and valuable record on the observation of a child from the 8th month to the 6th year, a very brief digest of which is presented: First indication of number, observing things in pairs at 8 months; at 16 had an inclination to enumerate similar things, by successively touching them, counted her fingers, but not in correct order; at 17 taking nuts out of a box, etc., one by one, time and time again; at 19 delighted to transfer objects one by one; number above duality was not conceived; "more" has been used, can count, but has no idea of quantity above two. Taking out cards she would say: "De wu" each time, apparently understanding it. At 20 months she understood "all" of any objects. The idea of succession of units was evidently manifested in various ways. At 22 months she tried to count 5; her uncle counted his fingers, she held up hers and counted correctly to 5. Two days later one finger was held before her, she said, "one;" two, she said "three." Being asked to look again,

she said: "four," and went mechanically through the list while only 2 were presented. For some time about the 25th month she would call more than 2 "two-three," could count to 10, but did not know 3. At 26 could count without help, if not allowed to count for both taking up and laying down; yet in the 28 month sometimes 2 appeared to mean only more than one. Was proud of her first independent counting, often chanted the numbers; two days later, all alone, trying to count beyond 10, she said 11, 12, 14, 18, 15, 40; do not know how she picked it up. At 35 she could add the combinations to 6, but only subtract one; counted to 19, stumbling on 7 and 17; also counted by repeating names at random. At $4\frac{1}{2}$ years she counted to 50. Four months later Miss Shinn began lessons in number with objects, she cared little for this, and apparently learned little. Her mother, taking her, dropped objects and made it frankly a lesson with a demand on the imagination. The child responded better to this and soon came rapidly into an understanding of numbers. She reduces all to counting, says she does it in her head. Though concrete terms are used, she does not think in such. At 5 years 8 months, could count 1,000. The above is digested from 55 pages.¹

Change of Order of Number Names. One hundred and seventeen such cases were tabulated. A close analysis was made to ascertain if any order was generally hit upon, but such was not found except that 7, 9, 11, and 13 are omitted much more frequently than any other numbers. Eighty-nine, out of the 117 cases reported, omit or misplace one or more of these numbers. Thirteen count almost entirely by using the even numbers, but no general rule prevails. This disregard for order shows that the child cares only for the series of *successions*, and that any suitable words will afford it a counting machine.

Does the Number Series, or Object Series Get Ahead? This question was answered by 181; of whom 151 say the number series; 30, the object series. The facts revealed under this head are of the utmost significance. Sufficient cases have been cited in previous parts of the article. In the individual tests made on 66 children, I found that children in the model school and even in the first grade counted with considerable difficulty if they were required to keep the object and the number series equal. It becomes quite a slow process. Mr. S. told me that his children would not get the number series ahead if he moved the objects over very slowly. The fact that children can hardly go fast enough when following the series only, seems strange, but simply indicates that the number series and its application to things are quite different.

¹ See page 232.

A Passion for Counting is strongly emphasized by 131. By 43 it was carried over into adult life; in 88 it was most extreme between 7 and 10, disappearing soon thereafter; 57 first had a passion for following the abstract series, later for counting things. The culmination of this passion between 7 and 10 indicates that it is the period when the number series is applied to the object series. Such may be designated as the counting period which in some is prolonged and highly developed. Dr. Badanes does not specify any age for this counting period, but we infer from his suggestions on teaching numbers that it falls within this period.¹ B——. H., when only 5, could really count 1,000 by 100's, and did count 300 by saying 101, 102, 103, etc. F——. M. could count 100 rapidly when 3. Counted everything she saw when 7 and 8, and often counted time by seconds when alone. T——. Mary, at 8, would stop to count the shutters on houses, count her steps; everything had to be counted or she was not satisfied. One night went to bed very unhappy because she could not count all the stars.

Counting on Fingers, by Movement of Toes, Head, etc., is noted by 260. The reader is referred to what has been given on movements in counting.² F——. In a school of 50 children I found that every one counted on their fingers, most of them on the sly, but some unconsciously. G——. I find that when children are forbidden to use their fingers, they will resort to some other movement, tapping the foot, moving the toe, head, or arm, even to any muscular contraction. In some late experiments on counting, involving considerable complexity, Mr. Bohannon found that subjects could not count without making some movement. The motor element plays a large part in nearly all thinking; but any one giving attention to any series of succession will find this tendency stronger than in most other mental activity. The rhythmic nature is perhaps more effective.

Errors in Making Figures. One hundred and seventy-two errors are reported; 43 make 3 backward; 52, 9 and 6; 31 confuse 3 and 5; 28, 9 and 6; 18 are miscellaneous. These may furnish minor points of interest for the teacher.

Individualization or Dramatization of Numbers. Only 35 cases are given. C——. I always thought of 1 as tall and thin, 3 as cranky, 9 graceful, 7 stubborn. D——. When a child, numbers were always some real person to me; 3 a well known carpenter, 4 a heavy woman, 7 a lawyer always prosecuting 9, etc. How this came to be I do not know, and cannot remem-

¹ Falsity of the Grube Method.

² See page 234.

ber when they did not appear so in childhood, even now I am not entirely free from it.

How Different do Arabic and Roman Numerals seem? brought forth some rather peculiar answers. Only 4 say they like the Roman numerals; 173 dislike them because they are "stiff," "dignified," "reserved," "vain," "used for state occasions," etc.; 69 detest them because they are of "no use," and cannot see why letters must be used to express numbers. E——. I always thought them grand and stately, and took extra care to make them. G——. Roman numerals seem like something foreign, always thought of Roman soldiers and avoided them when I could. A——. Thought they were meddlesome because they are both letters and numbers. D——. Dignified, always associated them with kings. H——. Always had a great significance to me as I had seen them in the Bible, dreaded to use them. Do not like them now except on the clock. H——. Arabic common; Roman numerals something extraordinary, so brave looking. It would be interesting to relate several more of these returns; the clearness and earnestness with which every one is stated bear conviction that here are some psychological associations, somewhat common, but perhaps unsuspected. They certainly give valuable hints on the laws of association which, if not valuable in themselves, throw light on certain phenomena that seem not to come under any laws of association, such as we have already mentioned, etc.

"*Eye-Geometry*" is indulged in by 150. All of this has been so well worked up in *Mental Automatism*s to which reference has been made that I deem it unnecessary to present the matter here.

Accounts of 19 children unusually bright in mathematics, and somewhat dull in other branches, are given; and 6 who are quite stupid in mathematics. One boy, 9, can read and write, but cannot learn to count.

The Likes and Dislikes in Mathematics are difficult to classify. Seventeen different parts are mentioned as being liked; 21 disliked. Three hundred and fifty-four mention some like or dislike. Since the manner of teaching, etc., modify one's taste so much, I shall cite only the points that seem to be free from this and of most interest. Fifty-five like Interest, none dislike it; while 48 dislike Stocks and Bonds, 2 express a liking for such. Mensuration is liked by 25, disliked by 13; only 1 reporting "eye-geometry" dislikes mensuration; 17 of those who report such like it. The G. C. D. and L. C. M. is detested by 23; 19 like Mechanical work; 12 detest problems; 14 girls and 9 boys hate the whole of arithmetic. Geometry is liked by 36, disliked by 1; Algebra is liked by 34, disliked by 1; but these nearly all come from a single school. Such are the points of

any special interest. The prevailing reason for likes and dislikes was "useful," or "no use."

Besides the above, 260 papers from the 4th and 5th grades, in which children state their likes and dislikes, have been examined. In the 4th grade 38, out of 124, dislike Long Division; 51, G. C. D.; 22, Concrete Problems; 47, Fractions. Sixty-nine like Addition and Multiplication; 62, the Mechanical; 20, Decimals. In the 5th grade 35, out of 136, dislike G. C. D.; 14, Percentage; 19, Fractions; 16, Denominate Numbers. Sixty-two like Interest; 28, Decimals; 18, the whole of Arithmetic.

What Numbers Give Most Trouble in Adding or Multiplying? There were 440 returns received; 157 give 7 and 9; 88, 7 and 8; 34, 6 and 7; 42, 7 only; 18, 9 only; 26, 3, 6 and 8. The others were miscellaneous. Seven is found in 327 cases, 9 in 204. Five say 9 is easy, always 1 less than 10.¹

From the above returns it appears that we may justly conclude that there is a period of number development that precedes conscious counting, quite distinct in children, if not in animals; that tallying by beats, sticks, etc., mark the spontaneous development of the series-idea; that number names are surely learned abstractly, or by rote; that counting first proceeds by following the series names without any regard for the order of the name; that number names are first applied promiscuously to objects in which the *number represents the order of the object in the series and not a collection of objects*; that guess-games and a passion for counting have a considerable place in child-life from 6 to 10, which is, to a great extent, a period of spontaneous counting; that children in their first application of the series to things run the series ahead; that a *muscular movement of some kind is almost unavoidable with children when counting, and not uncommon among adults*; that personalization of numbers may originate in the early application of the number series to things in which the person or thing stands for 4, etc.; that Roman numerals are generally disliked; that a spontaneous habit of forming geometrical figures exists among many; that likes and dislikes of subjects in arithmetic depend in the main, upon the probable degree of usefulness in life, but

¹ On examining the U. S. Census for 1880, it is found that those who guessed at their age, etc., have a decided preference for the fives and tens, also for even numbers. Analysis of ages from 28 to 42 for Ala., Mich., and U. S. as a whole, shows the most striking results. Those giving their age at 30 and 31, being about as 4 to 1 for Ala., as 5 to 2 for U. S.; at 40 and 41, as 5 to 1 for Ala., as 13 to 6 for Mich., as 3 to 1 for U. S.; at 47 and 48, as 4 to 5 for Ala., as 6 to 7 for Mich., as 4 to 5 for U. S., etc.¹ In various curves and diagrams the effect of even numbers is very discernible.

¹ *Favorite Numbers*. Scientific American Supplement, March, 1889.

the word "useful" is not explained by those answering, and this is subject to various modifications of teaching, age, position, etc.

Of the 100 returns bearing on second part of the syllabus, 22 say that mistakes are most common in subtraction; 9 in multiplication (being more of it); 14 say mistakes are more common in oral than in written work; 38, written work.

Twenty know nothing of the Grube Method; 17 have used it to advantage; 28 think that fractions should come earlier; more mechanical drill is urged by 18, and less of it by 28. A., a graduate of Yale, says: "I was taught the numbers as a drill in memory. It was an exercise in which every one wished to excel. We recited our tables until our work with small numbers became almost a reflex action; *never* had any trouble using them." C—. "Drill element is good, but it destroys the higher comprehension of numbers so necessary for development."

Forty-eight think that in the country children's number sense is so developed on entering school that objects are necessary only incidentally; 29 think there is much danger of carrying the objective illustration too far. M. writes that association is best acquired when it is casual and can be dwelt upon until the child will think "5" without thinking "star." Proportion is placed before percentage by 24, after by 56; roots are placed after proportion by 34; last, or with mensuration, by 62. Doubtless much of this depends upon former teaching, books used, etc.

Teachers in different places and schools were requested to give review exercises covering their regular work in arithmetic and to collect the papers for examination. I have examined 2,043 such papers, with the following results:

Grade.	No. of Papers.	No. of operations or problems.	Total mistakes.	Confusion of operations.	Mistakes in operation.	Mistakes in principle.
I.	405	6264	354	89		
II.	224	3815	694	137		
III.	550	11976	538	145	66	11
IV.	95	272	31	27		
	1274	22327	1618	398		
V.	139	1604	818		15	11
VI.	140	847	297		47	9
VII.	130	1357	359		21	13
VIII.	380	2251	890			
	2043	28386	3982	398	149	44

By confusion of processes is meant that the child's work would have been correct in some other operation as $4+4=16$, or $7-$

2=9. A large part of the work was not of such a nature as to give this information. Of the 1,618 mistakes made in the first four grades, 409 were of such a nature that it was impossible to tell whether they occurred from a confusion of processes or otherwise. Excluding these, about $33\frac{1}{3}\%$ of all mistakes in these grades are results of the confusion of processes. This confusion appears greatest in 3rd grade, but this is due to the fact that the 409 mistakes belong chiefly to the 1st and 2nd grades. More than 540 papers involved problems, and an effort was made to classify the mistakes on these according to operation and principle. Teachers are fairly well convinced that mistakes in the four operations greatly dominate, even in the 7th and 8th grades. It is very evident that subtraction is more difficult than addition. A teacher of 19 years' experience writes: "Subtraction is the most fruitful source of mistakes even to the 6th grade."

Two hundred and eighty-three papers on multiplication, involving 1,095 problems or multiplications, the majority of which contained three figures in multiplier and four in multiplicand, collected from the 9th grade, are of some interest. Total number of mistakes in these are 691; 186 were made in multiplying by 9; 195, by 8; 199, by 7; 57, by 6; 9, by 5; 15, by 4; 3, by 2. There are certainly some indications that Mr. Walker's charge has a general application. It will be observed in the table that the total mistakes, in all grades, exceed the number of papers by more than one-half. Considerable material in other lines remains to be worked up.

IV. THE APPLICATION OF NUMBERS TO ARITHMETIC.

Under this heading will be considered, (1) A brief digest of some books and articles on arithmetic, (2) Suggestions on text-book making, (3) The result of the examination of 166 text-books on primary and elementary mathematics.

Brevity may prevent a clear statement of a writer's view; in many cases only a few of the leading points can be mentioned. No classification will be attempted. Reference has already been made to Dewey and McLellan's *Psychology of Number*, in which the Hegelian idea of number as ratio and quantity as limited quality dominates. Number is developed from measurement and measurement arises from the adjustment of activity. The ability to count is made to coincide with the power of abstraction and generalization, requiring ability to hold the mind from being absorbed in the delights of seeing, hearing, etc. Counting trees, etc., can only give the idea of imperfect number since they are not conceived as a vague whole and broken up into parts of *equal units*. Two false methods of teaching numbers are in use, the one teaching numbers as a set of sym-

bols, the other, as a direct property of objects. Neither, they say, takes into account the fact that number arises in and through the activity of mind in dealing with objects. A severe attack is made upon the Grube Method because unity is taken as one thing. In the measuring method unity may be 12, a month, etc. The practical part everywhere shows evidence of an effort to join it to the theoretical, but the difficulty is likewise evident. Much of the practical part is common, and is found in use. The factor idea has its genesis in multiplication, multiplication in addition, division in subtraction; but neither is identical with the other.

Lefevre's *Number and its Algebra* has as its bottom principle the *Continuity of Number and Mathematics*. Number is *continuous*. Algebra was slowly developed out of the investigation of numbers, and geometry cannot apparently proceed without arithmetic. There is a more primary and essential connection than Euclid made in his Fifth Book. All definitions should be tentative and capable of expansion. The principle of *continuity* makes negatives, zeros, infinities, fractions, and all numbers alike. "Primary number is a discreet magnitude, and the product of rational processes." That ten is not a convenient base, that a distinction should be made between pure and applied arithmetic, that all multiplication is not repeated addition (*i. e.*, $\sqrt{2} \times \sqrt{3} = \sqrt{6}$), that long division should be taught first and abbreviated as the mind becomes able, such are but a few of the practical points considered.

Schubert's article on Monism in Arithmetic bears on the same line of oneness in mathematics, but is not so clear, deducing the laws of addition and multiplication from algebraic formulas. The substance of Schubert's article on Notion and Definition of Number has already been cited. Speer's and Graham's arithmetics have been previously mentioned.

The Committee of Fifteen gives mathematics the second place of all studies. So long as individual differences which are qualitative in so far as they distinguish one part from another are considered, objects cannot be counted. When counted, the distinctions are dropped out of sight as indifferent. Counting is the fundamental operation, all others are devices for speeding this one. Fractions are much more complex than simple numbers, involving three steps instead of one, and comparison or ratio. This is the cause of the child's embarrassment on entering fractions and operations that imply ratio. The pupil descends to the simple and returns to the complex numbers. Decimals are still more difficult, and roots a still further step in ratio. It is an advance to be able to separate or analyze the concrete, whole impression, and consider the quantity apart by itself. But if arrested mental growth takes place here, the re-

sult is deplorable. Without doubt such an arrest may take place by the too exclusive training in recognizing numerical relations.

The Committee of Ten recommend that the ordinary course in arithmetic should begin about the sixth year and be completed about the thirteenth; that the course should be abridged by omitting subjects that perplex and exhaust without giving any real mental discipline (that is the practical affords the best means of discipline); that the method of teaching should be thoroughly objective, and, as far as possible, inductive; that the text-book should be subordinated to the living teacher; that quickness and accuracy should be considered of great importance; that child geometry should begin in the kindergarten, and systematic instruction in geometry about the age of ten. The Conference declares that most of the improvements suggested on arithmetic "can be summed up under the two heads of giving the teaching a more concrete *form*, and paying more attention to facility and correctness in work."

Mrs. Hornbrook's Laboratory Method proceeds upon the plan of individual research on different subjects, and she is present during the work to "suggest." Those using this method lay stress on the flexibility of their plan and the previously unperceived differences found among many pupils. A class of 42 in geometry takes a few weeks in concrete work, only a part of the recitation being devoted to class work. The class is divided and inspectors are appointed over each division. She claims that it is related to "self-education," that it enables the mentally acute to advance rapidly, gives the dull ones time, and that the sympathy between pupils and teacher is strengthened. Mrs. Hornbrook has also given us a work on Concrete Geometry in which she wishes every beginning in lines, angles, squares, cubes, etc., to be made purely concrete, and to be worked out by the pupils. It is intended for grammar schools.

A Class in Geometry by Geo. Iles is a small pamphlet presenting the concrete aspect, and would begin geometry by observation; a house-lot and two fields tell us much geometry. *Go from facts to law.* The work starts off well, but it is difficult to see geometry in all that is said.

Alex. Hogg writes an article, More Geometry and Less Arithmetic, in which he maintains that arithmetic should not precede, but begin with, geometry. Fractions cannot be taught without geometry, and algebra is but a form of arithmetic, somewhat a connecting link between arithmetic and geometry.

In Jackman's treatment of the Relation of Arithmetic to Elementary Science, we have a somewhat new view taken. Studies are distinguished as thought studies and form studies. The former exist only logically, but not in ideal educational

methods, yet it is impossible to exactly define and distinguish them. The study of number is classed as a *form* study. Arithmetic stands entrenched in the dogmas of the past, it should give us a broader and better outlook into nature. Exactness is necessary but has been greatly neglected, not for want of mathematics, but for want of proper application. Ninety per cent. of all problems in our arithmetics are either abstract or deal with something foreign to the pupil. They should be of things *common* and *comprehensible*. *Arithmetic must be applied to science, and the mathematical operation made incidental, but by no means accidental.* Arithmetic is not to be the end, but a means to a more accurate end in thought studies, or science. Baldwin's Industrial Arithmetic is entirely practical, leads the pupil to discover for himself, follows much in the line of the work above mentioned.

Henry T. Eddy, in his address to the American Association, thinks the past teaching of arithmetic has been a failure largely because of an old idea of *discipline* that does not *discipline*. He insists upon more independent research, such as found in schools of technology, etc. Interest is awakened by use. Mathematical talents are not so rare as supposed. *Much more could and should be done in less time.*

The article on Two Paths in Arithmetic, by W. D. Mackintosh, first gives a brief presentation of the early development of counting. Multiplication is certainly the domain of counting, but our authors of text-books have referred it to addition. At first with objects the physical operations, addition and subtraction, were the important things; with multiplication, the mental processes. While the world is busy using the original way, the arithmetics go into group counting, requiring too much mental power, or more concentration than the child possesses. The chief point is the relation of one's possessions to himself. Ego is +, non-ego is—. In this simple fact is the foundation of plus and minus signs.

The falsity of the Grube Method is presented in a thesis by Dr. Badanes. The Grube Method ignores the process of counting, does not avail itself of the advantages of our decimal system of notation; it ignores the serial nature of numbers, begins with deduction instead of induction; it destroys spontaneity, and confuses the child with too many operations with one number; it is a mere mechanism. He maintains that every operation from 1 to 10 reduces necessarily to counting, which is fundamental. Only by real problems demanding solution can we explain the processes in arithmetic.

Directly opposed to this we find Prof. Safford, in his Mathematical Teaching and its Modern Methods, declaring that the Grube Method is unquestionably the correct method of teaching

arithmetic, that the difficulty it presents to teachers is what has caused it to be so little and badly used. "Matter must be digested by the teacher not only in scientific form, but in the form in which it is to be taught." All learning in arithmetic should be by the method of discovery.

The Grube Method as originally given in *Leitfaden für das Rechnen in der Elementarschule*, nach den Grundsätzen einer heuristischen Methode may be briefly stated as follows: The leading idea in Grube's Method is undoubtedly in general use, but not often referred to as such. Saldon is right in saying that the leading principle is *objective illustration*. The second principle presents the four processes with each number before the next higher is taken up. No new number must be taken up until all the possible combinations have been learned. The first year is devoted to numbers from 1 to 10; the second, from 10 to 100; regular work in fractions is introduced in the fourth year. The first step is from the concrete to the abstract, or the universal quantitative character of numbers; the second proceeds from abstraction to application. The child's greatest difficulty is in applied numbers. Multiplication and division are only forms of addition and subtraction. In a way one operation contains all the others. In measuring or comparing numbers pupils must acquire the utmost mechanical skill. The various combinations are familiar to most every teacher.

Doubtless every one is familiar with Mr. Walker's address on Arithmetic in Boston Schools. He claims that the amount of time is in excess of that which should be devoted to arithmetic, while equally important branches demand more attention. He points out that the study is largely pursued by methods supposed to conduce to general mental training, which, in a degree, sacrifices that faculty and accuracy in numerical computation so essential in all the affairs of life; and that the exercises are so difficult and complex as to not only destroy their disciplinary value, but become a positive injury.

Peterson, Supervisor of Boston Schools, differs from the above in his address to the Board in 1887. He claimed that the time should not be reduced; that arithmetic is especially important for developing mental concentration; that it is not an exercise in logic any more than running and eating are exercises in the science of hygiene; that pupils there are not inaccurate in number work; and that since it has been ordered that simple numerical facts must be discovered by the aid of objects, much improvement has followed.

Prof. Newcomb considers arithmetic poorly taught, and suggests that it should be more like the actual lessons of life, and that some lessons be built on the elements of geometry.

Ginn's Addition Manual applies the word method to addition

and subtraction. He maintains that two-thirds of all errors made are in these processes; that too much number work is given in the first two years; that bad habits are most that is learned; that the child should learn to read the only 45 combinations possible as he would so many words; that $\frac{1}{2}$, $\frac{2}{3}$, etc., are but another expression for 2, 5, etc.; that subtraction should be left until addition is mastered; that the signs $+$ and $-$ are not to be used until later; and that such is superior to the sign method, or the still more complicated Grube Method.

Some valuable hints are given in a pamphlet on Rapid Addition, by Sprague. The writer says that it grew out of experience in the counting-room. We do not need to make the teaching of addition easier, but slower. Grouping is the key to rapid addition, and the child should be taught the different combinations as words, and should learn how to break up others; such as $7 + 4 + 7$, where the 4 should be mentally broken into $2 + 2$; in all series, such as $4 + 7 + 10$, $7 + 11 + 15$, etc., the child should be taught that the result is three times the central figure.

Some statistical work has been done which must be considered. D. E. Smith has an article on Sex in Mathematics, based on 10,518 examination papers. Of the men, 63.6% passed, 59.2% of the women. The average of the men passed was 83.7%; of the women, 83.6%. In arithmetic the men stood noticeably higher in every respect; more of them pass, on the whole, and are better in geometry; the difference in algebra is in favor of the women. The same writer gives us an article on Arithmetic in Rural Schools, based on 4,000 reports from 19 normal schools. Twenty-six per cent. pronounce number names to themselves, 33% visualize, 12% imagine them written, and 75% were first taught to count by number names. Taste undergoes a marked change in passing from arithmetic to algebra and geometry; on the whole, it is towards a liking for mathematics. About 46% think analysis the greatest difficulty in teaching arithmetic.

Some tests on Children's Ability to Reason have been made by Hancock by sending test problems to the different grades. Mistakes on same problems were almost as common at 14 as at 12. The movement to introduce algebra and geometry earlier is commended; less number work in lower grades and more arithmetic from 9 to 13 is advised. He concludes that practical arithmetic generally means money transactions; that it is doubtful if children can reason beyond their experience and environment; that practical teaching should utilize this fact; and that ability to solve arithmetical problems varies with the rate of growth, in which girls show a decrease at 9 or 10, and 13, boys at 8 and 14.

A Study of the Mathematical Consciousness, by Miss Calkins,

contains some points of interest. It is founded on replies from 87 women and 30 men, Harvard students. She concludes that on the whole the subjects have concrete rather than verbal memories; that the proportion of verbal memories is five times as large among those who do not like mathematics as among mathematicians, and one and two-thirds as great among algebraists as among geometricians; that students who prefer geometry are more likely to be mathematically inclined than those who prefer algebra; that ease in memorizing is at least as common among those who like mathematics as among other students; that classification and reasoning ability is much more strongly developed in the mathematically inclined; that Huxley is wrong in saying that mathematics is an abstract science which knows nothing of experiment, of observation, of induction, and rests on deduction; and that no important distinction is made between men and women.

Methods of Mind Training is a small work by Miss Aiken, based chiefly on some short drills in the use of numbers. A revolving blackboard is used on which are placed figures which pupils observe for a few seconds, then reproduce in order, add, extract root, etc. In a few weeks, with five minutes' drill each morning, pupils showed astonishing results. Thirty-two miscellaneous numbers, such as 1789, varying from tens to thousands, arranged in four columns, were repeated after a single glance. Figures with dots, minus or plus signs, etc., were repeated; a group of 20 objects recognized instantaneously. The object of these exercises is to cultivate the power of concentrating attention, to quicken perceptive faculties, to cultivate accuracy in seeing and hearing, and to discriminate by immediately observing similarities and differences. It is claimed that the results have been very marked in awakening dull, slow-moving minds to activity, and causing them to take delight in their newly acquired power; that its effects are seen in reading music and learning poetry; that attention underlies the whole of memory, and this is the sure way to attention. Of course it is claimed that attention to these exercises will strengthen the attention for all and any other, and it is here that the claims will encounter greatest opposition.

The practical dominates in French education. This is quite marked in their text-books and treatises on arithmetic as well as in most of their text-books. As early as 1747 Barreme published *L'Arithmétique au Le Livre Facile pour Apprendre l'Arithmétique de foi-même, et sans Maître*. One cannot help but be astonished at the comparative excellence of this book. The four fundamental processes are given nearly four times as much attention as other works give, until almost a century later. Division is presented only in the form of cancellation, the ar-

rangement is good, and the explanations and diagrams seem somewhat modern.

Lacroix's *Traité Élémentaire D'Arithmétique*, written in 1811, is well worth considering. It is to some extent both a practical and theoretical treatment of number and its different applications in arithmetic. In the comparison of different objects which fall under our senses, says the writer, we are able to perceive in all, an attribute or quality by which they are capable of being increased or diminished. Such appears, in general, under two forms: as a collection of many particular things, or, of many equally separated parts. (Does not this single sentence contain both the series-idea and the rational-idea of number?) Soon comes a single whole without distinction of parts, it is as one conceives the distance between two points. The subjects in arithmetic are discussed and it is urged that fractions should be made the key to composite or compound numbers.

Some of the most interesting points from Dr. Scripture's article on Mathematical Prodigies have already been mentioned. In many cases of these mathematical prodigies the result is the only thing that seems to come in their minds. Bidder said it came in the short time it took him to announce the result. The velocity of mental processes cannot be adequately expressed. Precocity in counting is from 3 to 10. Their great peculiarity is the visual images of numbers which they always carry about in their minds. Ampère, Bidder, and Mondeux learned their arithmetic from pebbles.

Binet and Henri find that the mnemonic does not retain figures, but substitutes something else, while the calculators retain the figures as such; that the mnemonic is more powerful but slower than the natural memory for figures. More powerful because his substitution allows him to retain a number almost indefinite; slower because he must reproduce all the mnemonic phrases for numbers.

Binet's *Psychologie des Grands Calculateurs et Joueurs D'Echecs* is full of points of interest. Much of it is consumed in the comparison of Inaudi and Diamandi, an account of which I have given in *Genesis of Number Forms*.¹ Great calculators are, in general, from unknown or low parentage; they are either slow and dull in learning other things or void of interest in anything else, because they are absorbed in the pleasures and power of great calculations. Their power develops somewhat spontaneously and quite early, without aid and without knowledge of other things. Many of Mondeux's self-developed systems are deduced from algebraic formulas. Many chess-players were

¹ *American Journal of Psychology*, Vol. VIII, p. 521.

questioned; all of them visualize, but only one sees the entire board when playing blind-folded. As a rule, they see only the part where the combat lies.

The Number Concept: Its Origin and Development, already referred to, gives us a full treatment of the development of number names and of counting among primitive peoples. Primitive methods, previously mentioned, are thoroughly presented. Even where the concept appears lowest some circumlocution expresses the difference between *one* and *many*. Much uniformity prevails in counting on fingers, nearly always beginning with little finger on left hand. It appears that races lowest in civilization have also the feeblest number sense, but there are many important exceptions. Some savage tribes carry their system to 10,000 or even a million, while in many it is almost entirely absent. Leigh Hunt could not learn the multiplication table, and peasants in Russia have no idea of even a few hundred. The ability to count is always beyond the numerical vocabulary. Counting words are among the very first to appear in any language, yet they change less than any other part of a language. Kinship in tongue, otherwise remote, has been detected by these words. *With the savage the number concept is entirely concrete.* When number in the abstract is reached then reckoning ceases and arithmetic begins. The tables showing from whence savages obtain their numerals are valuable.

Several other valuable articles and books have been reviewed but space forbids a consideration of them here; however, a list of all so far consulted will be found in the bibliography at the close of this paper.

Suggestions on Text-Book Making. What is said under this head has grown out of eleven years' experience and the present investigation, and is in no wise intended to be dogmatical. The diversity of human intellects, human needs, human environments, child's spontaneity, psychic activity, and especially *mental phenomena in dealing with number*, demand that neither the teaching nor the text in arithmetic should be dominated by a *single* idea. For general use a text-book should be properly balanced between what is known as the *practical* and *disciplinary* use of arithmetic. It is true that each party claims to accomplish the best results in both; but every one knows that most business men work by rules, tables of interest, etc.; know and care little for the whys. It is possible to find good mathematicians well disciplined, but slow, inaccurate, and void of what is termed "good business sense."

In the presentation of numbers we must allow for the spontaneity of the child, for the knowledge of numbers already possessed on entering school, and for the manner in which it

was acquired; begin on the knowledge of the series it already possesses, and make the transition from this to objects. Counting is fundamental and even combinations furnish the first step, hence counting by 2's, 3's, 4's, etc., furnish the first steps in multiplication. The difficulties of subtraction are greater and more lasting than those of addition, hence its introduction on beginning addition must at first be incidental. Care must be taken not to confuse the child by introducing too many processes at once. *Children* do not look at things with adult minds, and it is not necessary to know all about 4 in order to know *any* thing; the processes need not be isolated as they once were, and the simplest fractions may be incidentally introduced quite early, but they involve more relations and hence demand more mental power than the unit. A routine presentation of numbers by the same objects develop *form* rather than number. Problems such as, "How many twenty-sevenths in three-ninths?" were solved by children 5 and 6 in the kindergarten. Ninths and twenty-sevenths were certainly names of some of the little cubes in their toy-box.¹ Such mechanism may prove more detrimental than beneficial.

We must distinguish between a child's ability to perform operations in the relation of numbers and its power to *understand language*. Children often fail because they cannot *read*. A class of 14 failed on a problem concerning a ball with a cavity. Inquiry revealed the fact that only two knew the meaning of *cavity*. I have no statistics of value on which to base it, but my impression from this special study is that children's ability to reason in arithmetic comes later than Hancock concludes; that much of the early work is performed in obedience to a mechanical formula even without the knowledge of the teacher. In the returns, 49 consider the mathematical "insight" a rather sudden innovation; I suppose something like the learning of telegraphy as given by Horter and Bryan.² This appears to be true in my own case, but it was certainly due to the manner of teaching and the excessive *help* received. Until further evidence this is a better explanation than to consider it a law of mind growth.

Arithmetical teaching must not be too formal. This is the rock on which our great advocates of analysis stumble. It must not be only an analysis, but a *special* analysis. Only a few days ago an ex-president of the University of West Virginia declared this to be the great evil of modern methods. "My child," said he, "can never understand my solution or see any meaning in it unless cast in a special form. Children's minds are set to a form." The child needs suggestions. Long and

¹ Grube's Method. F. Louis Soldan.

² Studies in Telegraphic Language. Psychological Review, Jan., '97.

formal analysis produces confusion and mechanism. Have you any devices in the use of numbers not given in your book or by your teacher? is a question I put to 1,124 children, receiving 407 replies, including 182 devices or departures from the rules; for example, $3\frac{1}{2} \times 3\frac{1}{2} = 3 \times 4 + \frac{1}{4} = 12\frac{1}{4}$, $19 \times 7 = 20 \times 7 - 7 = 133$. Skipping the 5's in adding, keeping a record of them on fingers; never adding 5 to 27, but 3, then 2; dividing a number like 17 into two parts to multiply it, as $17 \times 6 = 10 \times 6 + 7 \times 6$; never having anything to do with 9, using 10 and subtracting; counting percentage backwards; subtracting a number in parts—these are some of the devices mentioned. An interesting example is given in Miss Shinn's observation already mentioned: "How many 2's in 15?" she was asked when $4\frac{1}{2}$. She replied: "There are three 5's in 15, and two 2's in each 5 and 1 over; that makes six 2's, and 3 over makes one 2 and 1 over; seven 2's and 1 over." A young man who had given up his university education came to me for private lessons in arithmetic. He knew absolutely nothing of the subject in book form, yet he was a good business trader. I have often dictated problems to him, the correct result of which he would announce before he had completed taking it down; he was seldom ever able to tell me how he got the result, often receiving no encouragement of its correctness, and after prolonged effort would report unable to solve it. If not crushed by formalism the mind is almost unlimited in its variation.

Why nearly all advanced arithmetics should devote 60 or 100 pages to the four processes, when such has been preceded by one or two books treating them both oral and written, I fail to see. It is certainly not expected that such voluminous books will be placed in the hands of children. I remember when children used to begin in Ray's Third because it presented all of the primary steps, and both teacher and parent decided it was unnecessary to purchase the first books. This is frequently the practice now in the country. The evil results are readily discernible.

Decimals should grow out of common fractions, and in reading and writing decimals the child should know *exactly* the number of figures necessary for each decimal at least to millionths. This can be learned by proper drill in three recitations; then there will be no stumbling over either reading or writing them. This may be called mechanical, but anything is better than the usual confusion we see in enumerating. Make it rational also, that is all right; but immediate recognition of decimals is necessary. To avoid confusion in division, pointing off should precede the operation. Wentworth is the only one I know of giving both of these points.

Reference has already been made to the fact that the rational-

idea must not be the basis of number in all its development and application, and that as such it cannot explain all of the facts ; neither must its value and application be overlooked at the proper time and place. While some base everything upon it, others too much ignore it, even giving proportion a small corner in the last of their text-books. The series-idea undergoes various processes of development in its applications. In its pure mathematical sense, when applied to space and time, the number concept is greatly modified, and differs from its application to familiar tangible objects. In other words exact measure is different from applied numbers. *Number in its first stages of application does not consider equality proper*, but it is only when the idea of continuity is put into number, which is necessary to complete the *oneness* of mathematics, that this equality or rational-nature is developed. Pure mathematical quantity and number are not identical.¹

Number is not so simple nor so limited in its application. The *rational process* is preceded by a development which it does not take into consideration. Comparison is a process of reasoning *to which* the number series is applied, rather than *from which* it is developed. This pain is *greater* than that ; I enjoy eating *more* than playing ; I am fatigued *more* than I was last night, are comparisons of subjective states to which the number concept may be applied in a very indefinite manner. But let none of this analysis stand as an argument against the use of the rational-idea at the proper stage of development, or even its incidental introduction from the beginning ; but it does not

¹ Since writing the above I have reviewed Russell's article On the Relation of Number and Quantity, in *Mind*, Vol. VI, pp. 326-341. It is the most masterly treatment of the rational-conception of number I have seen, and states this difference clearer and stronger than I had conceived it. "Throughout this abstract development of number," says he, "the unit has become gradually more important and explicit. When it is quite explicit we get a third kind of number, which, outside our arithmetic books, is alone of importance. This kind I shall call *applied number*." Again, "the connection of quantity with number—we must conclude—is due partly to motives of convenience, but mainly to a confusion between two fundamentally distinct ways of regarding space and time. It must be maintained, therefore, that quantity applies to contents only when they are regarded as immediate data, and applies then only when such data are not understood. In this it differs from number, for number can, by abstraction, be applied to material perfectly understood. While things which can be numbered together must have some conception in common, things which can be measured against each other must have no conception not in common, and yet must differ." The idea of continuum must stand or fall with the relative justification of quantity as against number. Much stress is placed upon the distinction made between intensive and extensive quantity. All quantities must be reduced to spatial equivalents before they can be quantitatively treated.

appear that children are capable of reasoning accurately or to much extent until 12.

Having supposed for several years that percentage was quite a blind process to most pupils, in which they closely follow formulas, and that the difficulty lay in the fact that they do not comprehend per cent. as a common fraction, either expressed or understood, I determined to make a test of 224 students, either teachers or preparing to teach. For this purpose 40 problems were prepared involving transactions in gain and loss expressed in common fractions; 81.6% solved all of them; the remainder missed, on an average, over five problems. Later the same problems, the words being changed and the fractions expressed in terms of per cent., were given to 212 of the same students; only 62% solved all, while the average number missed by the others was about 3. It appears that a much more intelligible comprehension can be secured by an interpretation of per cent. in terms of common fractions, such as is well presented in Graham's arithmetic. There ought not to be so much isolation of so many subjects that come under percentage as though they were entirely new subjects. I can hardly account for so many likes for interest and so many dislikes for percentage, especially stocks and bonds.

The rapidly growing use of the Metric System and its exceeding simplicity demand for it more attention than is generally given. It must be remembered that Congress has authorized the use of the Metric System in many departments of the Civil Service.

All of the concrete problems should be followed by sufficient abstract problems to give a more general idea of the application of number. If proficiency and accuracy are to be obtained, the purely drill element cannot all be eliminated from arithmetic. As far as possible problems must grow out of the child's environment.

Upon the suggestions herein outlined a brief review will be made of texts in arithmetic now in circulation and those lately issued, so far as I have been able to ascertain.

The examination of 166 text-books on elementary and secondary mathematics reveals some important points, if they can only be put in a condensed, yet comprehensible form. Nearly all of these are arithmetics, because in arithmetic the application of number is of most interest.

Earlier Text-Books. Robert Record's Arithmetic (ed. 1590 and 1618) reads like a Bible; 260 pages are devoted to the four processes; alligation follows fractions; dots are used for teaching the combinations of numbers; it contains 630 pages, of which fully 500 are consumed in discussion and explanation.

Edward Wingate's Practical Arithmetick and Artificial Arith-

metick (1629) are two books, the latter is written to help the former by borrowed numbers from logarithms. Extensive tables are prepared in interest, etc. All the lower denominations in compound numbers are made out in decimals of the standard. He published another in 1676, in which he first gives the name and number character of all numbers up to 1,000 for English, Greek, and Roman notation.

Cocker's Arithmetic (1677) partakes largely of that idea of "sacredness" once attached to mathematics. "By the secret Influence of Divine Providence," say the author, "I have been instrumental to the Benefit of many: And now do with the same wonted Alacrity cast this, my Arithmetical mite into the public Treasury, beseeching the Almighty to grant the like Blessing to these as to my former Labors." The book has many commendable features, and, judging from the fact that there were 48 editions, must have been quite popular. It is largely taken up in discussion.

James Hadder's work (1719) is much like Record's. Tracing everything to the four fundamental operations, he makes such the dominant idea; but nearly all is devoted to explanation and discussion. Such is one of the chief characteristics of all the earlier books, perhaps somewhat made necessary by the limited knowledge of the teachers. Probably in this respect the contrast between the old and the new is more striking than in any other.

Gordon and Dobson's Arithmetic (1771) contains many very curious problems, rather puzzles. Weights, measures, etc., are introduced just after division. Such is one of the most common qualities of all the old texts. Fractional money frequently follows simple addition, and this is still quite common in English texts. Taken all in all more prominence is given to fractional money, weights, measures, etc., than any other single subject; these nearly always follow the four operations and precede fractions. Temple gives addition of compound numbers on 5th page.

Pike's Arithmetic (1793 and 1797) makes one think of their early school days. Many of the rules, almost word for word, can be found in books somewhat modern. The 6% method is used and interest is placed last, save alligation. I cannot understand the prominence given to alligation by so many. In many it is near the middle, following fractions, but in some it precedes. Several books develop *all* rules on the style of the catechism by fixed questions and answers; but never give a summarized statement of the rule. R. C. Smith and several others proceed with each step, as follows: Q. How do you begin to divide? A. As in short division. Q. How many steps are there? A. Four. Q. Name them. Such as this is found on every page.

Walsh (1814) gives no rules, only a few suggestions to the teacher. Motto: *Iter est breve per example*. James Robinson (1825) introduces long division before short division. In this and other particulars it should be classed with texts of the last decade.

Emerson has the number series and their names to 100 learned first. Butterworth has the pupil to express first in words, then in figures, even as high as 6,100,192,204. Porter's Ready Reckoner (1843) applies cancellation to every part and gives *every* rule by directing what to place on each side of a vertical line. Hilliard's two volumes are full of devices and short cuts in arithmetic.

Colburn's Arithmetics (1849) once had such a wide circulation and the plan so well understood that little mention need be made here. This plan objects to explanation on the part of the teacher and leaves the child to work out his own salvation. Written work is discarded. The later editions have introduced much not found in the original. Horace Grant's Arithmetics (1861) presented in England the Inductive Method. Mental arithmetic is claimed to be of fundamental importance. Nearly all the work in both books is mental. The subjects treated are very much reduced; are on the same plan as Colburn's; were once quite popular in England. Walton's Pictorial Arithmetic (1866) is full of pictures of all kinds that may be counted; reduces it to object lessons. Burchett's Practical Geometry (1855) holds the lecture method by which the teacher makes drawings on the board, pupils take notes, and make careful drawings afterwards. No figures are given.

Leyesne's *La Deuxième Année d'Arithmétique* devotes considerable to compound numbers; square root follows numeration and decimals. It introduces geometry to a considerable extent, and the commercial element occupies a prominent place. It is in many respects an excellent book.

The general characteristics of the earlier text-books on arithmetic may be stated as follows: Extensive discussion and explanation which made the volumes comparatively large; the arrangement by which great prominence is given to fractional money, weights, etc.; stress laid on proportion being placed before fractions in some cases; the assignment of interest rather to the last part of the book; and the peculiar problems, often puzzles. On the other hand, many of the presentations of primary number, such as Emerson's Elementary Lessons, have not been greatly improved upon; many sets of problems are unsurpassed. The short cuts and devices which business men use so much are obtained almost entirely from these old books. The disciplinary idea may be detected in many, yet, on the whole, the earlier books were dominated by the *practical* idea

no less than those of the present day ; but the practical was not so generally accepted.

Later Text-Books. Milne's Standard Arithmetic introduces many purely number problems in the simplest processes of addition and subtraction, etc. The presentation of decimals is defective ; proportion is somewhat slighted ; 7 pages of inadequate treatment of the metric system is presented near the close ; percentage is likewise defective by not being based on common fractions ; mensuration is well treated, and the review problems are excellent. The book aims to be both disciplinary and practical.

White's New Arithmetic presents many commendable points. Counting by 4's, 7's, etc., is in strict harmony with the development of the number concept ; fractions, decimals, and the metric system are well presented. Percentage seems to be too much wedded to formulas. Proportion precedes roots in its proper place. Problems are practical and well graded.

¹ Moore's Grammar School Arithmetic applies the Inductive or Laboratory method throughout. Not a single rule is given, and the pupil is left to devise the definite processes. First the concrete, then the abstract corresponding to it. The simple processes occupy 48 pages, the presentation of which is very good ; the treatment of fractions is up to date. The subjects are repeated somewhat on the Spiral-plan. Too much space is devoted to denominate numbers. We can well see how such a book would be all right in the hands of competent teachers, but there is a gap between the subject matter therein presented and the child's knowledge that must be supplied some way. If all teachers were able to properly assist the child in developing the proper manner of procedure, this great objection would disappear, but the majority of teachers are young and inexperienced. I am unable, for example, to see anything to guide the inexperienced teacher and pupil to an understanding of decimals. Whether the book presupposes some knowledge of such, I do not know.

² Hewett's Arithmetics, Primary and Practical, are on a somewhat new plan, and in every way justifies the title *Practical*. The rules are few, suggestions to the point ; little distinction of classes or cases problems is made ; the pupil is left to sort his problems in percentage, etc., and to make the application as he must do in practical life ; all subjects not considered practical are omitted. A better treatment of percentage and interest I have not found. On some points the student is liable to confusion, which is a stumbling-block with all learners ; decimals

¹ Lately published.

² Lately published.



are developed from the unit ; the metric system receives but a passing notice of 3 pages as the last subject. In the main the work is too true to a single idea.

¹ E. E. West's Twentieth Century Arithmetic, in two parts, presents a few modifications of interest. The second part is the first grammar school text I have found that does not treat extensively the four processes. This opens with as extensive and *complete* consideration of fractions as can be found anywhere. Decimals and percentage might be improved ; the metric system is well presented, and the equation of one unknown quantity is introduced in such an incidental manner that it cannot help but be beneficial to the student, and at the same time free from any opposition to those who oppose the logical method. The book is small but comprehensive, and devoted to the practical.

Walsh's work includes a series of three books, on what is called the Spiral-plan, that is taking a little of a subject and returning to it again, perhaps several times. This differs from the frequent review problems in that more subjects are introduced early in the course, and treated less extensively. The practical omission of rules and definitions is noticeable ; decimals are well presented ; the chapter on geometry adds to the work, for geometry should be introduced incidentally much earlier than it is. The equation is used especially in percentage and interest. Several systems of texts present something of this nature, but I have found nothing that carries this plan so far. If carried out in this form one cannot help but think that it will lead to a lack of organized knowledge, if not confusion on the part of the pupil.

The Venable series subordinates the theoretical and technical to the practical. The Elementary is somewhat on the Grube style ; it is good in the presentation of measures. The Practical devotes 63 pages to the four processes ; rules are long ; the metric system is placed in the appendix.

Sanford's works are old in the presentation of elementary numbers ; fractions and compound numbers are well treated ; the arrangement is unsatisfactory.

Baldwin's Industrial Primary Arithmetic claims to be the natural way of teaching numbers, leads the pupil to discover for himself. Class work and seat work are separated. Everything is presented in the common, practical, business way. Arithmetic must be studied solely for its application to business life. It is the best example of the practical idea, pure and simple, I have seen.

Prince's Arithmetic by Grades includes eight small works on the Inductive plan, the most excellent points of which are the

¹ Lately published.

treatment of fractions, the introduction of the elements of geometry in the 4th grade which is gradually increased each year, and the excellently graded problems. There are no rules, but suggestions and diagrams somewhat take their place. If used in graded schools and by experienced teachers no difficulty would be encountered. They also repeat the topics in the grades. In the presentation of primary number some improvement might be made.

Graham's Common School Arithmetic has ratio as its fundamental principle, and is founded on the *intensive* or disciplinary idea. The same may be said of Speer's, McLellan and Ames's. Two elementary works by Miss Bacon go with Graham's. His work treats the four operations somewhat differently from most; thus, $2 \times 4 = 8$; $\frac{1}{2} \times 8 = 4$; $4 \times 3 = 12$; $\frac{1}{4} \times 12 = 3$. Tables of such are quite extended, and, without doubt, to *much advantage*, both in multiplication and in fractions. Proportion is treated more than usually and is placed before percentage; the metric system is practically ignored; decimals could be improved. Fractions and percentage are admirably treated. The work is wedded to the idea of ratio and discipline.

Speer's New Arithmetic, in two parts, is absolutely devoted to the idea of comparison as a means of developing accurate judgments. A set of blocks of various kinds and sizes go with each book. The Primary begins by having the child find or handle these solids; bring a *larger* or *smaller* one, the largest and smallest. Comparison in colors is introduced at once. Look at four colors, think the colors (eyes closed) from top down, from bottom up. Which is second from top, third from bottom, second from bottom, etc.? Relative magnitudes of all kinds are pointed out, largest solid, smallest solid, tallest boy; compare the height of pupils, largest surfaces of solids, etc.; then an exercise comparing sounds, etc. Show the longest edge of the largest solid, shorter edges. Cut a slip, cut a longer one, shorter one, larger square. Draw a line, one a *little* longer, shorter, etc. Draw a line, separate into equal parts, show one-half of it. By means of such comparisons of blocks, lines, colors, etc., the work proceeds step by step. The Elementary is also accompanied by a *large* collection of blocks illustrating integral and fractional relations. Ratios consume the greater part; interest and percentage are developed from ratio. Much of this kind of work has been done in our best school, but only in a few instances has it been made the whole of arithmetical training. No other series of text-books follows such a line exclusively. McLellan and Ames's work claims to be founded on the idea of number as measurement, yet both the subject matter and the treatment are entirely different from Speer's. So far as I am able to judge, Miss Walter, of Willi-

mantic Normal Training School, has been practicing Speer's plan for some years in the model school, in about as pure a form as it can be put. Doubtless such work should have a much larger place in our schools. The high value of comparison added to acute attention is of the utmost importance in all reasoning processes whatsoever. The great function of the work above cited, and to some degree of all the other books in this line, is to dress up thought and to make general thinking more acute. No teacher should be blind to its great value, but at the same time such an *exclusive treatment ignores some of the fundamental facts in the nature and application of number*. One may be well trained in all the geometrical and quantitative comparisons and yet be void of good business sense in arithmetic.

¹ McLellan and Ames's Public School Arithmetic is based on number as *measurement*. The ordinary drills in the four processes cover the first 74 pages; many of these are pure abstract exercises in numbers, but money value and linear unit play an important part. The four processes are followed by four pages on Comparison of Numbers, and this by square root. How square root to three and even four places is to be made *rational* at this period of development one may well inquire. It must presuppose much more knowledge of arithmetic than the previous treatment indicates. Fractions are handled in an excellent manner; decimals are made to grow out of the dollar and the metric system; however, the metric system is the last chapter in the book. The same difficulty to join the practical to the philosophic idea of number that is evident in *The Psychology of Number* is made still more evident by this book. One looks in vain to see in this work any great difference from half a score of others. It is by no means as true to the idea as Speer's.

Griffin's *Supplementary Work in Arithmetic* (1893) is a rather large work including lines, areas, volumes, bulk and percentage, and is based, in the main, on the measuring idea. Various figures and drawings are given and many questions concerning their comparison. If judiciously used by the teacher in connection with other work it cannot help but prove of great value. The author appears to have no special method or theory to present, nor does he think of making it the whole of arithmetical training.

Franklin's *New Arithmetic*, by Seaver and Walton, presents no new departure of note, but is none the less pedagogical. The First Book contains several commendable features. The processes are rather incidentally introduced, but not confused, and counting, in various ways, receives attention. The chief points of excellence in the Second Book are found in both the

¹ Lately published.

number and character of the problems and the rather incidental introduction of subjects.

The Wentworth series has had such a wide circulation that they are doubtless familiar to all teachers. The Primary follows somewhat the Grube method of presentation, and the simplest fractions are introduced early by use of objects and diagrams. Decimals are presented and are followed by the most excellent primary treatment of percentage I have seen anywhere. His Practical Arithmetic contains 372 pages, and presents the usual elementary treatment of numbers in the four processes. That drill in the four processes is the main thing in arithmetic may be offered as a justification of this practice; but why children capable of handling this and having had the two previous ones, should need drill in adding $5 + 8$, etc., in subtracting $22 - 3$, etc., and in similar simple operations in multiplication and division, I do not understand. The treatment of decimals, common fractions, and percentage is not susceptible of much improvement, save that decimals precede common fractions, and little more prominence might be given to reading and writing decimals according to the number of figures required. This series is a medium between the purely disciplinary and the purely practical, between the purely rational and the purely mechanical in arithmetic, between the thoroughly inductive and the thoroughly deductive. They are neither dominated by a single idea nor spoiled by method.

Besides the above, Wheeler's Arithmetic, Primary Number Lessons and Advanced Arithmetic, by the State Board of Education, California, Ray's series, J. M. White's Oral, Brooks's Mental, Bailey's American, Robinson's series, and Atwood's Graded, arithmetics are used in different sections of the country, and several others are quite limited in their circulation. Other books which I have not been able to secure may be extensively used. On account of necessitated brevity and lack of space, I have thought it best to confine my review of later texts to those of this country, although several others have been examined.

The German books are quite conservative, introducing the practical, but clinging to the disciplinary. Each step must be thoroughly mastered, and mathematics taught as a unit. The French make much of the decimal or metric system of measures, etc.; induction, as presented by Grant and Colburn, has not much place, books are seldom without some rules, but they are quite exact and clear. The English texts adhere to deduction in some form. In the oldest books currency, weights, etc., nearly always follow division, and occupy much space, and are often introduced with addition; alligation receives attention. The marks of the *old* are very evident in all of the *new*.

Among the great diversity of opinions in the articles and

books above reviewed, it is evident that there are four general lines of thought : (1) Those who hold and treat arithmetic as a system of logical reasoning, highly suited to develop the mind, and place it more on the plane of pure mathematics ; (2) Those who consider arithmetic useful only, or in the main, for practical business life, and would make the shortest cut possible to this end ; (3) Those who base all instruction on induction, omitting all rules and explanations, resorting to the laboratory method or method of self-discovery ; (4) Those who cling to the old idea of deduction from fixed principles or rules. Omitting some differences in the presentation of primary numbers, nearly all other differences, and many of these, are involved in these points. The first two classes differ concerning the end and the nature of arithmetic ; the other two concerning the best means for obtaining the desired end. Those seeking discipline, or development of judgment, may use either the inductive or deductive method ; likewise some maintain that the practical is best obtained by memorizing and applying rules ; others claim that the most direct and thorough way to secure the practical results is by induction from real transactions. Only a few occupy either of these extreme lines, and there are all grades of compromises, or attempts thereat. Perhaps few would claim to belong to the first or second classes as presented, especially the first, for those who make arithmetic a means to develop accurate judgments also claim to realize the best practical results.

That practice does not always conform to theory and philosophy is manifested in the texts on arithmetic. Notwithstanding the varying theories and methods discussed in prefaces, books, etc., one only needs to put aside about one-half dozen of our latest works, and the differences in the remainder are practically not worth mentioning. The teaching of arithmetic is the most traditional of all subjects ; its methods have come down less changed than any other topic, and by many it is thought to be the worst. It is in the presentation of primary numbers that the devices of teaching are so opposite. The mathematical mind was a late development in the race, and so it is in the individual. Too much value is often attached to the abstract manipulation of numbers, and the believer in the concrete often fails to realize the necessity of an intellectual evolution into the higher forms of mathematics. "Skill in computing may be acquired without any intelligent apprehension of arithmetical science, and a profound insight into the truth and principles of arithmetic may be attained without much facility in using numbers."

V. CONCLUSION.

The main inferences from this work may be briefly summarized as follows:

That the number concept is the outcome of a long process of development marked in the race and in the individual.

That the first step is the formation of a series-idea by the innumerable variety and successive changes in consciousness.

That this develops an abstract idea of succession, manifested in children's desire to follow in various ways any series, and especially in mathematical prodigies.

That prominence is given to certain members of the series by the various rhythmic processes as illustrated by the experimental work reviewed, and by the great preference given to certain numbers.

That there is a counting period quite marked in children and to which the mathematical prodigy belongs.

That the number, time, and space concepts are closely related, in their nascent state at least, and this relation gives number a wider application.

That dramatization of numbers, number forms, and prodigies belong to the counting period.

That *some movement* is perhaps unavoidable in the early stages of counting. If the motor element be a necessity of all thought, it is even more so in following an abstract series.

That the application of the series-idea to things is the second and more conscious step, hence the difficulty.

That number as measurement is not the whole of the development of number, but only the complimentary side of the series-idea.

That number as measurement can by no means explain all the mental phenomena of numbers.

That the power to manipulate the series bears little or no relation to the development of reason and general judgments.

That number has applications not in a pure mathematical sense as an exact quantity.

That there is a great variety of mental phenomena found among children and adults in connection with numbers.

That the chief lines of discussion concerning number and texts on arithmetic are directed towards either the disciplinary or practical end, the deductive or inductive method of presentation.

That arithmetics and methods of teaching have remained, comparatively speaking, quite constant until the last few years.

That the chief defects in texts are found in the presentation of primary numbers, fractions, decimals, proportion and percentage.

That there is a general tendency in this and other countries

to introduce many of the elements of geometry and, at least, the simpler uses of the equation into arithmetic, the former of which, at least, is to be commended.

That the authors of text-books seem to be searching for methods and often ignoring the manner in which the race and the child naturally acquire such knowledge.

That no method should ignore the long psychic and rudimentary stages of development. Yet if allowed to play too great a part, morbid conditions may be developed, such as seen in morbid counters, excessive counting on fingers, etc.

That the great diversity of human intellects, human needs, human environments, child's spontaneity, of mental phenomena in the development and application of number, forbid the exclusive use of any one orthodox method in teaching number and arithmetic. (We have already reached this generalization in teaching reading.)

That practical business training in arithmetic, and preparation for higher mathematics and abstract thinking in general are not identical, nor obtained in the same way.

I must express my great obligation to Drs. Hall, Burnham, and Sanford for valuable assistance — especially to Dr. Hall for suggestions and criticism; to Prof. Luckey, of University of Neb., to Prins. Barnes, of Fairmont Normal, W. Va., Deahl, of West Liberty, W. Va., Miss Williams, of Trenton, N. J., students of these institutions, and others, for valuable returns; to Supt., teachers, and authorities of Worcester schools, for assistance and privileges; to other schools rendering assistance; to different book companies for granting the privilege to examine their publications and for books donated.

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A NEW FEATURE IN MANUAL TRAINING.

By GERTRUDE A. STOKER.

Whittier in his immortal poem "Snow Bound," speaks of "a chill no coat however stout of homespun stuff could quite shut out," transporting us in imagination to the time when mothers not only designed and made the clothing for the numerous family, but spun the flax or wool and wove the cloth. "Store clothes" were then unheard of. In the schools of that generation, two short terms constituted the year's work and long vacations gave ample time for home duties. The physical and manual training of a girl came during the time she worked by her mother's side, assisting her to make carpets from bits of rags, braid rugs, knit stockings, to cut and make articles of clothing, besides the various household duties, such as sweeping, dusting and cooking. This necessity to express thought through manual labor, did more to educate the girl to use her powers, to develop her self-hood than the knowledge acquired in the poorly kept schools.

Modern inventions have so modified modes of living that the necessity for manual training in the home has almost completely ceased to exist. "Store clothes," "store carpets" are universal.

To-day the school year means ten months of severe application, with music, dancing and French crowded into Saturdays and vacations. In many cities, the children are obliged to prepare from two to three lessons daily, outside of school, which leaves but little time for recreation.

The vast majority of girls know nothing about sewing. This fact, although deplorable, is an outgrowth of modern inventions. Thoughtful teachers seeing the importance of mental development through manual training, and realizing the abounding energy and ceaseless bodily activity of children, advise supplying them with concrete material upon which to expend their energy. As manual training has ceased to exist in the home, the school must meet the exigency.

Several years ago manual training was placed in the course of study for St. Paul. One hour a week was devoted to this work. To the boys were given problems which they drew following the teacher's dictation. Later these were made from wood in the shop. In the fourth and fifth grades the drawings gave one view of some solid and the problems were made from thin wood. In the sixth grade, working drawings of simple

geometric solids were given and the problems constructed in wood. Some useful articles were made in this grade. In the seventh and eighth grades, models requiring greater skill illustrating the application of simple joints used in practical wood-work were made, also apparatus used in school work.

While the boys were busy with their wood-work the girls were taught to sew. Small pieces of unbleached cloth were supplied which were cut exactly four by five inches. Upon these pieces the teacher drew circles or squares.

The girls were taught first to outline these forms with the "running" stitch. When this was accomplished to the satisfaction of the teacher, similar pieces of cloth were given to them upon which they "back-stitched" circles or squares. If my memory serve me correctly, pieces of red and white striped calico were then supplied. These the girls tore into two parts turned each edge and sewed together "over and over." They then sewed two selvedge edges together "over and over." Next came the hemming stitch, then gathering and putting into a band, and finally they made four button-holes, one inch apart, on a piece of cloth six inches long. At the end of the term, these pieces being of no value, were thrown away.

In the seventh and eighth grades the girls were obliged to bring from home aprons, skirts, and nightgowns, upon which they worked for a whole year without finishing. Much dissatisfaction was felt by the teachers on account of the lack of interest manifested by the pupils both in sewing and wood-work. The results were disappointing.

Under the guidance of a very able teacher the following experiment was tried in an out-lying district where the children came from homes of limited means. The average age of the class was fourteen.

The work as described, was completed in four months. One hour per week of school time was taken, but some who became very much interested worked outside of school.

Each girl provided herself with a box which she carefully lined. This she equipped with a thimble, two spools of thread, a paper of needles, some pins and a pair of scissors. Small needle books and pin cushions were made to complete the box in its furnishings. Each girl contributed a small amount of money with which to purchase a doll. A committee of three was appointed for this purpose, but all the toy stores in the city were visited, not only by the committee but by each girl in the class, before this important purchase could be consummated. Should the doll have brown hair or golden; should she be able to cry or be voiceless; should her joints move or not; should her body be made of kid or cloth, were grave matters for weighty discussion. At last a good sized doll about eighteen

inches long, with a kid body, bisque head, yellow hair, and blue eyes, was brought into the schoolroom by the committee of three who had secretly shown it to each girl before school, occasioning whispered ejaculations of "Oh! how beautiful!" "Isn't she dear?" "How sweet!" Nothing seemed too good for the doll's wardrobe. The girls wished to buy silks and fine material but, although a good quality of cloth was chosen, no extravagance was allowed. With few exceptions the material was obtained from mothers' piece bags. With tape-measures and tissue paper the girls proceeded to make patterns for the clothing. For the underwaist they measured the length of the body from neck to waist, the length of the body under the arms, the length of the shoulders, the width of the back and the size of the waist. Allowing for seams they cut their patterns, basted them together and tried them on the doll. In a similar manner they made the patterns for all the clothing without other assistance than the very able suggestions and criticisms of their teacher.

As far as possible the girls were allowed to choose the articles of clothing which they desired to make. The underwaists were made of heavy cloth furnished with a strong band and buttons for the drawers and elastics. Glove-buttons were used for the back. The neck and sleeves were finished with lace neatly sewed on "over and over." A combination suit was made from an old blue silk vest cut to closely fit the body. The neck was finished by a crocheted edge of blue silk. The under skirts were made of white flannel finished at the bottom with a beautifully embroidered edge done with white silk. The seams were cat-stitched with white silk. One of the two long skirts was tucked by hand and finished with lace and insertion; the other was plain, finished at the bottom with a simple hem. The nightgowns had plain yokes edged with lace. All the seams were felled. Three dresses were included in the outfit. The work-dress was made of gingham with a simple hem at the bottom. The waist had a yoke with the cloth below full on. The sleeves were rather full and finished at the wrist with a band upon which lace was sewed. To accompany this dress was a gingham sun-bonnet and two white aprons. A pretty wool dress, thoroughly "up to date," was made for street wear. To accompany this was a cloak made of blue eiderdown cut with a yoke. A Russian hood of the same material and a white eiderdown muff and boa. A pink mull afternoon dress was prettily trimmed with narrow ribbon. It was cut low at the neck with a full ruffle for finish. The sleeves were puffs reaching but to the elbow. A crocheted sack was made for house wear. Two handkerchiefs were made of fine linen hemstitched and edged with lace. This doll was

also supplied with sheets, pillows and pillow-cases, a cream cheese-cloth comfortable tied with blue, and table linen.

She was named Anna Evalyn Gertrude Monroe, to do honor to the teacher, the principal, the supervisor of drawing and the school.

Miss Monroe's influence soon began to penetrate the homes. Interested mothers visited school to return to their neighbors with glowing accounts of the capabilities of their daughters. Fathers came seemingly to inquire after their children's progress, in reality to see the doll.

Although in the early stages of the work the boys had looked askance at the various articles of wearing apparel which the girls inadvertently allowed them to see, gradually their timidity or assumed indifference was replaced by interest which occasioned many helpful suggestions. Later a desire to contribute to the outfit was noticed.

Already many wooden work-boxes had been presented to the girls by interested boys. Then one by one the girls were presented with needle-book covers, made of thin pieces of wood neatly carved, until each had one. The suggestion to make a set of furniture for the doll was received with great enthusiasm. One article has been completed. It consists of a chest of good proportion, about thirty inches long, made to contain the wardrobe. The sides and top are covered with carved designs cut with the knife. It is most elaborate in design and perfect in finish, without exception the finest piece of work ever done in our grades.

The boys are still at work upon the furniture. According to the teacher's plan they first submit their original plans for criticism, after which they work out in wood the furniture which they have designed. Much of this work they do at home, and what the results will be we cannot now tell.

What to do with the doll now became a matter for serious deliberation. At first some thought to obtain money for their library by selling it, but the children had grown to love their offspring and the sentiment—"It's like selling one's own baby," seemed to fill each pupil's heart. To give it to the "Babies' Home" did not quite meet with approval. At last, the very happy thought of presenting it to their kindergarten seemed to satisfy all. So, one morning, with much ceremony and a great deal of suppressed emotion, they had the pleasure of presenting Miss Monroe and outfit to the little children, whose eyes grew larger and fuller when they gazed upon the wonderful doll and were told that it was all for them.

Miss Monroe's influence has spread to other rooms and to other buildings. So many dolls were dressed that the Babies' Home was not slighted. Dolls of different nations, to use in

geography, were dressed in some schools. The very best work that the girls were capable of doing was put upon these clothes. It demanded helpful suggestions and criticisms from the teacher, but no coercion was necessary to secure good results. Many stitches were taken out to be done again, but a cheerful atmosphere always prevailed.

The reason why the work in this case was a success when formerly it had been unsatisfactory was because sewing was not done for sewing's sake, but as a means to an end, that end being the expression of the natural instinct of construction possessed by all children. Behind the drill in sewing, which was given to acquire skill in execution, was the impelling energy of natural instinct to make something.

Children not only desire "to make," but they like to finish quickly that which they make. Had large garments been given to them, much discouragement would have been noticed before the completion of the work, but upon the doll's wardrobe lack of interest has never been seen.

Sewing isolated from the hearts of the children is dead, mechanical drudgery, but when used as a means of expressing that instinct — mother love, it becomes a happy occupation.

AN EARLY PHASE OF THE MANUAL TRAINING MOVEMENT—THE MANUAL LABOR SCHOOL.

By JOHN A. HANCOCK.

During the first thirty years of this century there swept over this country a general revival of educational interest, which manifested itself in a variety of ways. Through its influence the free school system was either established or modified in a majority of the States. Private schools, church schools, academies, seminaries, and colleges sprang up in large numbers, both north and south. Public men found in education a topic that readily gained for them attention.¹ The publication of school journals, notably the *Annals of Education* and the *Journal of Education*, was begun. School text-books in great variety were printed. The educational ideal of the time was to get and diffuse *useful* knowledge. For this purpose societies were formed which became numerous enough to affect not only State, but national organization.

Among the many crude experiments tried not only here, but abroad, in this period, were the infant schools, the monitorial system, and the manual labor schools. The infant school disappeared and was revived in the form of the kindergarten thirty years later. The monitorial system was widely popular and continued as a method for giving instruction in the public schools till within the memory of the present generation. The manual labor school, too, had its period of rapid growth and decay. It deserves, however, to be better known, because it was a phase in the development of the manual training movement of to-day, and the purpose of this paper is briefly to describe it.

To be appreciated it must be studied in its relation to the general movement of its time. The apprentice system was beginning to decay. It had produced competent mechanics for generations, but now had to face the growth of the factory system, the introduction of steam power, the division and subdivision of trades, the attractions of the professions, and of commercial life. Moreover the schools of the time as well as those of to-day trained for a quiet life rather than one of activity.

There was a great desire for a "practical" education. Working men became imbued with the movement for improvement, and Mechanics' Institutes sprang up here, as in Great Britain, in all of the larger towns and cities. It was to the efforts of the one at Providence that the very early establishment of the graded school system and the institution of the first superintendency of city schools in this country was due (8). Farmers' Book Clubs and Agricultural Societies became equally numerous.

The educational system that had been handed down to the people included nothing of physical training. This had hardly been necessary in the early colonial times. The spirit of patriotism which the revolution stirred resulted in an effort to make military training a part of the curriculum of every public school. It did not, however,

¹ For example, Jefferson in *Nile's Register*, Vol. X, pp. 34-37, and Madison in Vol. XXIV, p. 202.

pass beyond the stage of agitation in any State. Its only result at that time was the establishment of the military academy. In more recent years it has assumed an interesting phase in public schools, academies and colleges. The German turning became suddenly popular in 1825, and lasted for a year or two, long enough to gratify the curiosity of the people. Several minor efforts resulted from its influence, notably in the Round Hill School at Northampton. Gymnasiums were opened in this same year at Harvard, Yale, Williams, and Brown, but the day of the medical director was not yet.¹

It was in the effort to popularize education, to give the poor a chance, to substitute something for the apprentice system, to preserve health and give "practical" preparation for life that returning travellers heralded with a religious fervor the manual labor school of Fellenberg and began the establishment here of similar schools.

Prior to this, however, the idea had been advanced in this country as early as 1786, in the *Columbian Magazine* (1). The anonymous author calls it "A Plan for establishing schools in a new country, where the inhabitants are thinly settled, and whose children are to be educated with reference to a country life." A tract of 300 or 400 acres was to be set aside, upon which a school building, house, barn, and workshop were to be erected. The farm was to be supplied with tools, implements and live stock. A manager, assisted by a farmer, gardener, cook, and male and female teachers, was to have charge. Children were to be admitted between the ages of eight and fourteen. The boys were to learn reading, writing, the elements of arithmetic, gardening, farming, stock raising, cider making and beer brewing, and if time permitted, geography, history, geometry, surveying, and book-keeping. The girls were to learn "all the arts of domestic economy" —what else is not stated, though much may be inferred. Each boy was to have a plot of land to cultivate the year through. What he produced on it was to be his own. The expenses of his schooling were to be met by his own labor. In summer the boys and girls, separately, were to study each two hours, forenoons and afternoons, and work during the remainder of the day. Eight hours of teaching would be done by the "master," after which he was to help in the fields.

The advantages of a school like this were held to be training to habits of industry, religion, morality, behavior, preparation for actual life, besides a great uplift for the community.

Ten years later, Dr. John de la Howe, of South Carolina, left by will (2) property for the establishment of a school modeled on this plan. In 1807, the plan was put into operation. The property of the school in 1824 had increased to \$42,000. No other statistics of the school are available. It certainly was not a factor of consequence in the general movement.

This was, as has been said, inspired by the labors of Fellenberg, who got his idea in part from his friend Pestalozzi. The French invasion of Switzerland brought ruin to much of the country. Moved by a spirit of patriotism and philanthropy Pestalozzi gathered a group of the wandering orphans together on a small farm and made for them what home he could. How to train them for self-support was his problem. He taught them gardening, farming, and such work as their necessities demanded. So great was his success that he conceived that in industrial training lay the social, moral and religious reform of Switzerland. With the re-establishment of order in the country his school was scattered. He repeated the experiment in later years but all his efforts resulted in financial failure. Fellenberg took up the

¹ The history of the movement for physical training has been written by Dr. Hartwell in his reports to the Boston Board of Education.

problem and devoted his fortune and ability to founding and carrying on an institution that should effect this object. He believed that the class organization of society was right and was of divine origin, yet the condition of these classes might be greatly improved and their relations to each other harmonized. Agriculture, he held to be the natural employment of man; the country his rightful home. "There the pure air, the influence of vegetable life, the regular habits and salutary exercises connected with a country life produce a vigor of constitution and an energy of character in an agricultural population not found in the mass of those who are educated in the city."

He purchased the estate of Hofwyl near Bern and prepared for his great work. There he hoped to avoid the precocious, superficial development which city life gives children. Beginning in 1806 he opened first a school for the training of teachers. This training was in harmony with the conditions which necessitated each teacher to cultivate a small farm in order to supplement his meagre salary. By this kind of a school Fellenberg hoped to reach a large body of the people indirectly. Additions were made at intervals to the estate. Workshops were built for making and improving agricultural implements as were others for making clothing. A printing house was built. An agricultural school for educating the laboring classes, was begun. Later, trade schools and an academy for the higher classes of society were added. The agricultural school had for its purpose the giving of a common school training to poor boys and fitting them for farm life. It was hoped to realize from their labors enough to clear the expenses of the school. The school was maintained, though not by this means. The editor of the *Annals of Education* spent three months there and published in 1830 (3) a series of articles descriptive of the institution and its methods of work. He says of this school: "It is intended to . . . train children to a life of labor and especially to an agricultural life; and to cultivate their intellectual and moral faculties at the same time, that they may understand the processes they perform and appreciate the importance of the advantages of the duty of industry instead of engaging in it as an arduous labor."

Pupils are wakened at half-past four or five according to their ages; half an hour is allowed them for making their beds. After a lesson of an hour in summer and an hour and a half in winter, they attend devotional exercises and breakfast. Here the task of each division is assigned. At eleven o'clock they return to dinner and then have a second lesson of an hour and a half. At five or six according to the season they have a piece of bread and a third lesson of an hour and a half. At seven or half past they sup. An assembly is then held for the review of the day. It is closed by devotional exercises; the younger children go to bed, the elder again receive instruction or occupy themselves in some other way."

Nearly every Swiss canton founded such schools. Switzerland had become for other reasons also an attraction to the educational world. Visitors flocked in from every part of Europe. The labor school idea was taken up and the experiment repeated in England, France and Germany where it is not now intended to follow it.

In this country it was developed on the lines of reform schools, and in both elementary and secondary education. The schools can not be said to have been indigenous. The model in Switzerland was closely followed as possible. The second manual labor school was founded at Gardiner, Maine, in 1823. Shortly afterward an attempt was made at Derby, Conn. The school was short lived like so many others, failing financially after a year. Concerning it one of the pupils tells us (4) "that it had fifty or sixty pupils of both sexes. The school was an

attractive and pleasant one, and those who were so disposed made good progress in useful learning. Several of the boys were entrusted with surveying and leveling instruments, and used them frequently and successfully. The boys rambled extensively over the hills of that region, did some work in hoeing corn and potatoes, and in making hay, and once made a pedestrian excursion to Lane's mine at Munroe. The work of the school was harmonious, a spirit of study prevailed amongst the pupils and the supply of out of door sport was ample."

Perhaps the first annual report of the Manual Labor Academy at Germantown, Penn., reflects best something of the character and spirit of the average school of the kind. It was established in 1829 and was equal to an ordinary high school of that period. Mr. Woodbridge's review (5) of it exhibits, too, the feelings of the supporters of the movement. He says: "To Saltzman, Pestalozzi, Fellenberg and their contemporaries seems to have been reserved the glory of proving to the world by a series of persevering but successful experiments that there is no necessity of sacrificing the body for the sake of the mind and heart; but, on the contrary, that mental and moral improvement can be far more successfully prosecuted by devoting a portion of time to agricultural, horticultural and other manual labor. . . ."

The premises (of the school) consist of forty-two and a half acres of land, several outhouses and a commodious dwelling. The farm is in the rear of the dwelling. There is a stable, coach house, granary, cart shed, farm yard, and also a garden of a third of an acre.

"The youth have respectable talents, habitual industry, and are pleased with the mode of education. Their health has been uninterrupted except in the few cases diseased when admitted. Every individual has been restored to health. All board with the principal. Their diet is plain and in as great variety as is consistent with economy and health and is as much as possible products of the pupils' labors on the farm.

"Piety, learning and honesty are here united. Surely such an enterprise cannot fail. The usual branches of study are perused in addition to the Bible. The hours of recreation are not hours of waste and idleness and immorality. They are employed in useful bodily labor such as will exercise their skill, make them dextrous, establish their health and strength and enable each one to defray his own expenses, and fit him for the vicissitudes of life. . . . Thus far they have been employed in carpenter work, farming and gardening."

In New York five such schools were incorporated. They all failed financially after a few years. All dropped the manual labor feature and survived under other conditions. Of the five, the Yates Polytechnic Institute is of greatest interest, as its founder—one of the few business men interested in the movement seems to have grasped much of the idea in recent times credited to Della-Vos, and made so much of since 1876: namely, a scientific training for industrial pursuits, the teaching of theory in the class room and the application of it in shop, laboratory and field. Its early plans embraced five departments: an executive having general supervision; a scientific, with principal and necessary professors, and agricultural, mechanical and manufacturing, each in charge of superintendents. With 1,100 acres of land and a situation evidently in its favor for growth in its various lines, it is a matter of regret that business losses of the founder checked its career. The legislature was petitioned, but it gave no aid.

In even greater numbers these schools were founded farther west. There were six in Illinois, while a list of twenty is available of those in Indiana. Marking the high water mark of the movement was the organization of the Society for the Promotion of Manual Labor in

Schools and Literary Institutions in New York in 1831, "under the conviction that a reform was greatly needed, both for the preservation of health and for giving energy to the character by habits of usefulness and rigorous exercises." Mr. T. D. Weld was elected secretary with the duties of travelling, lecturing and gathering information. One report was published by him, the society holding no second meeting. Much of the value of the report is lost from its omission of all historical and statistical facts. Mr. Weld got no further than his time in the discussion of his theme. The following paragraph, widely and favorably quoted at that period, is typical of the whole report. "The states of the body are infinitely various. All these different states differently affect the mind. . . . What duty can be plainer than to preserve the body in that condition which will most favorably affect the mind?" It was generally assumed by the friends of the movement that only manual labor is physical training. One prominent and enthusiastic worker writes, "that gymnastic exercises are both dangerous and frivolous, and that work is right because the process of training is never joyous, but rather grievous." Many attempts were made to make this system a feature of the public schools. Bills were brought before many State legislatures and congress, but in no case did one pass. Few new schools were organized after the early thirties, while large numbers of the older ones failed financially. The general interest in education was waning. Public attention was being taken to other things. Yet at this very time (about 1835) the heads of a number of the schools united in a circular which it is interesting to compare with present manifestoes of Manual Training School supporters.

(6) "The superintendents have great satisfaction in being able to state that a strong conviction pervades the minds of the young men generally, as well as their own, that laborious exercise for three hours per day does not occupy more time than is necessary for the highest corporeal and mental energy; that so far from retarding literary progress it greatly accelerates it; that instead of finding labor encroach upon the regular hours of study they find themselves able, with a vigorous mind, to devote from eight to ten hours per day to intellectual pursuits; that under the influence of this system, mental lassitude is seldom known; that good health and a good constitution are rarely, if ever, injured; that constitutions rendered delicate and prostrated by hard study have been built up and established; that this system, with temperance, is a sovereign remedy against dyspepsia and hypochondria, with all their innumerable woes; that it annihilates the dread of future toil, self-denial and dependence; secures to them the practical knowledge and benefits of agriculture and mechanical employments; gives them familiar access to and important influence over business men, of which the world is principally composed; equalizes and extends the value of education, and lays deep and broad the foundations of republicanism; promotes the advancement of consistent piety by connecting diligence in business with fervency of spirit; and especially is it valuable in training for the ministry, removing all temptation to insincerity. . . . Students with whom this system is unpopular are lazy and worthless in everything."

There have been repetitions of the manual labor school experiment in a modified form in recent years. Amongst these may be mentioned the Hampton Institute, and the Tuskegee, Alabama, Institute. In these the opportunity is given the student to learn a trade and acquire an education at the same time. These schools do not pretend to support themselves, however, by the returns of student labor.

Beyond this it may be said that the manual labor idea survived

down to comparatively recent years in the State agricultural colleges of this country: for example, in the early seventies the State agricultural college in Kansas. That school was little else than a classical school with farm and gardens attached where the students earned a large part of their expenses.

Fellenberg's great executive ability had no counterpart in this country in the movement, which he practically headed for more than forty years.

The schools here under a different environment attempted to duplicate his work. The self-supporting feature of them here was perhaps their weakest point. The system offered a solution, which we have rejected, but for which we have offered as yet no substitute—helping deserving poor to help themselves get an education. It placed literary training and practical training side by side. It clearly recognized the necessity of physical training for the purpose of health. It saw, too, that in farming, gardening and the trades, lay many of its essentials. It recognized the corrupting influences of city life and founded its schools in the country in order to avoid them. It dignified and ennobled labor. It offered a solution for the problem of educating for the ministry. (7)

It failed, however, to correlate the school-room work and the manual work. Of manual activity as an expression of thought or as developing mental power by developing motor centers of the brain, it had no conception. Play was not thought of as having educative value. Only repeated failures forced its supporters to the conclusion that the labor of boys and girls is too unskilled and of too poor a quality to yield returns in any financial way. Neither did they see that hard, physical labor is exhausting mentally and not conducive to growth. It was reserved for later times, too, to see that for educative purposes students should be advanced to new work as soon as the task in hand is well learned; mere repetition after this point is passed has no value to the pupil.

I wish again to express my obligations to Dr. Burnham for criticism, and appreciation of the many courtesies of Librarians Green and Barton.

The history of the more recent movement of manual training has been written up in the Report of the Commission on Manual and Industrial Training in Massachusetts. Present conditions are reported by Hon. C. D. Wright in his last report as Commissioner of Labor.

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FOURTH CONGRESS OF ILLINOIS SOCIETY FOR CHILD-STUDY.

The fourth annual congress of the Illinois Society for Child-Study was held April 28,-May 1, 1897. It was preceded April 26-28, by a series of conferences of child-study workers, chiefly representatives of educational interests in the States of the Mississippi valley, for the purpose of discussing the feasibility and plan of a North American Child-Study Conference. As a result of these preliminary discussions such a conference was tentatively formed. The plan is the result of a very general call from a large number of States for co-operative effort on the part of State child-study societies, in securing especially an adequate educational recognition of the child-study movement. That representative men and women from the several States stand ready to unite in furthering the cause of child-study was abundantly proven by the large number present at the preliminary conference and by the large number of letters presented from those who could not be present.

Most prominent among the purposes of this conference, as thus far tentatively organized, are the furtherance of State Associations for child-study, to secure the discussion of child-study problems in all fields that will be affected by child-study research, to furnish a central committee to direct the co-operative publication of such child-study literature as will best assist in the furtherance of the movement, especially along child-study lines. The organization provides for the formation of a so-called conference, to be composed of representatives from the State Child-Study Associations. The officers of the conference are to consist of a president, a vice-president, for each State represented in the conference, and a secretary-treasurer.

Dr. Wm. L. Bryan, of the University of Indiana, was elected president, and Dr. C. C. Van Liew, of the Illinois State Normal University, secretary-treasurer. The first regular meeting of the conference will be held during the sessions of the N. E. A., when it is expected that the present tentative organization will be made permanent. It remains to be seen in the future whether or not there is a distinctive work that such an organization can perform. Probably the most striking feature of the plan is that which seeks the co-operation of the various States, each through a few of its best representatives, in the much needed work of effective and systematic propaganda and educational application.

The chief interest of the week centered in the sessions of the child-study congress. Col. Francis W. Parker is the man to whom was due the credit of a very rich and attractive programme. The great success and large attendance at the congress the previous year, May, 1896, together with the unusually strong programme then presented, made it a matter of doubt as to whether as great a congress could be had in 1897. Mr. Parker, however, was fully equal to the task of eclipsing his former effort. The programme offered unusual attractions and was carried out with but two or three serious omissions, due to the unexpected inability of a few to be present. . . . It is the further purpose of this article to reproduce in brief some of the thoughts that were prominent at this congress, though it will be impossible to mention all the excellent papers and addresses.

It was not one of the least attractions during the week that delegates from a distance were enabled to visit and inspect the Chicago Normal School, and that special arrangements were made by its department of psychology, to illustrate the work of the school, especially in child-study lines. Under the direction of Dr. Colin A. Scott, physiological and psychological tests, illustrating the general work of the school, were made upon children and reports were given of the results of certain studies. In addition to this the monthly Parents' Reception, of the Chicago Normal School, which has become a recognized force in Chicago, and an open faculty meeting of the same school, also gave visitors some opportunity to see whither the educational movements of Chicago are tending.

Wednesday afternoon at the Normal School was devoted to the discussion of the formation of Mothers' Leagues and Round Tables.

Wednesday evening was devoted to the question of the relation of child-study to Sunday School work. Patterson Dubois, of Philadelphia, editor of the Sunday School Times, and Dr. Walter L. Hervey, President of The Teachers' College, N. Y., were both unable to be present, but the discussion was opened by Dr. C. A. Thurber, Dean of Morgan Park Academy, in a valuable and interesting paper on Children's Religious Notions and their Relation to Religious Training.

Dr. Thurber opened with a graphic characterization of the Great Teacher who, "set a child in the midst of a lot of grown folks and told them to become like the child," while "*we* set a grown person in the midst of a lot of children and tell them to become like him." He believed that the Sunday Schools at large have resting upon them one of the most vital of educational problems, but that, not ignoring the good already accomplished, they by no means begin to meet the demands of modern life, or modern knowledge of childhood. The Sunday School needs a great revival of interest from a new source. There is nothing about the nature of the Sunday School to prevent the use and application of every pedagogical law found serviceable in the day school, much less of the laws of child nature. "Every good result, every good method of child-study should be transferred to the Sunday School as quickly as possible that it may reap the full benefit of as good influences as there are going."

Possibly no line of individual child-study yields greater returns to religious instruction than that which seeks to know something of the child's social instincts and of his social environment. From the latter come the forces which determine very largely the source of the child's ethical and social ideals and motives. Again, the study of children's interests in literature and in nature, reveals many points of contact with the child's religious life. The study of the Contents of Children's Minds, by Dr. G. S. Hall, has shown us, also, how necessary it is for the work of instruction, wherever it is undertaken and whatever the subject, to be adapted to the individual world of thought and action in which the child has grown up. "A child's mind will profit by no other ideas than those it can assimilate. . . . Whatever theological notions are presented, therefore, must be, if they are to find a lodging place, naive and artless, simple and primitive, like the nature of the child. For anything smacking of the subtlety of doctrine he can have no real appreciation." The historical parts of the Bible should be taught for many years more as deeply interesting stories of ethical value, rather than as history and chronology. Many of the Bible maxims and sayings are unintelligible to children, because they presuppose experiences most of them have never had, *e. g.*, "a virtuous woman is far above rubies." "Suppose the 'elders of the Jews did build and prosper through the prophesying of Haggai the prophet and

Zechariah the son of Iddo; 'what is that to a little child who has no conception of space, time, organized society, or even of our commonest adult conventional ways of doing things.'" Dr. Thurber's paper closed with an appeal to religious teachers to get back to Christ in method as well as in thought. In the discussion that followed, among those taking part in the further elaboration of the question, were Mrs. Lama-reaux, of Chicago, and Col. Parker.

Thursday morning the regular opening of the congress occurred in Schiller Theatre. Col. Parker presided, and the opening address was delivered by Supt. of City Schools of Chicago, A. G. Lane. After his words of welcome, Dr. Wm. L. Bryan, of the University of Indiana, was introduced to speak on some applications of child-study. The chief thought to which Dr. Bryan gave emphasis centered about some investigations which have recently been made at the University of Indiana, under his directions. (Comp. Studies in the Physiology and Psychology of the Telegraphic Language, Psych. Rev., Vol. IV, No. 1.) Briefly stated, the law is that the learner of telegraphy does not progress steadily and at a fixed ratio in his ability to receive the messages of others, but by fits and starts, increasing in speed rapidly for a time, then remaining at a standstill, then lunging ahead again, and so on, thus passing as it were a series of alternate upward inclines and level plateaus. Many get discouraged in the early plateaus and get no further,—never become expert; others achieve the highest plateaus and are known as experts. The problem that now naturally suggests itself to the psychologist is, in how far can this same law be found to be true in the acquisition of other facilities, *e. g.*, learning to speak the native or foreign tongues? The educator, too, is at once interested in the inquiry as to whether or not his own dealings with children may not be affected by the law, if it have any universal validity. He asks,—Do children experience these plateaus of comparatively stationary activity, in which no progress is discernible? Do they occur, for example, regularly, in teaching reading? In giving facility in the use of the multiplication tables? If so, how am I to conduct myself most rationally toward the child? Can he at this time of no progress be permitted to relax his efforts and let time bring about what seems to be the involuntary organization? Or must he still persist in unremitting, hard, every-day work until the plateau is passed? If the latter, how am I to carry his interest over the trial? Dr. Bryan gave no solution to these questions, but left them with the teachers for further watching and experiment. They are certainly among the most suggestive and stimulating problems that have been put before the teachers in this work.

Dr. Bryan gave way on the programme to Dr. Reuben Post Halleck, author of *Psychology and Psychic Culture*, and the *Education of the Central Nervous System*, Principal of the Male High School, in Louisville, Ky. His address was on *The Education of the Motor Centers*, and was ably and well delivered. He proceeded from the proposition that in proportion as the various centers of the brain are given exercise and brought out, as it were, by being called into play, does the individual become symmetrically developed. Not only all the *senses* require this development to secure the best development of the brain, but the muscles, as well, must be called into play as universally as possible, in order to secure the complete awakening and development of the motor centers. The results of the modification of the brain from motor activity are no less pronounced in the development of the brain than those from sense activity. Motor training must begin early; it is to the credit of the kindergarten that it gives emphasis to this side of the child's development. Furthermore, motor develop-

ment must go hand in hand with sense development. Motor promptings pass from sensory centers to motor cells. Out of the sensory-motor activity develops the idea-motor activity. The idea, the residuum of the old sensation that first prompted the action, now prompts the same action; thus all ideas may be regarded by the educator in the light of possible sources of action. For example, the motor element in literature should not be passed by the teacher without being called into play in the process of interpretation; the same is true of history. In closing, Mr. Halleck called attention to certain phases of motor memory of significance to the teacher, and to the fact that only through movement is the motor side of the being primarily educated. This last thought, as he showed, carries with it far reaching and important educational considerations.

The second general session was held Friday forenoon, also in Schiller Theatre. Dr. W. O. Krohn, of the University of Illinois, opened with a vigorous and stirring address on the value of certain phases of Child-Study in the School-room. His central thought was the need of having regard for the conditions of fatigue under which many pupils are asked to work. He was especially earnest in tracing the connection between fatigue and cases of precocity and abnormality. Dr. Krohn also gave expression to some valuable thoughts on the connections between nutrition and the emotional and ideational life of school children.

He was followed by Dr. Colin A. Scott, on Morbid States in Childhood and Brain Hygiene. Dr. Scott gave a very valuable and interesting address. He impressed his hearers with some idea of the importance of studying these morbid states of children wherever they occur. In closing he gave a list of the symptoms of fatigue, which is so closely associated with many cases of mental abnormality in children, as follows: headache, morning tire and evening excitement, too great reaction, sleeplessness, losing weight or excessive fat, depression, exaltation, fears, hypogastric pains, itching of special parts, coldness or heat of special parts, numbness, lack of sensitiveness, cramp and paralysis, erethic heart, unreliable memory, impaired powers of sense discrimination (eyes, skin), yawning, and laziness.

Dr. Scott was followed by Prof. L. H. Galbreath, who read a very inspiring and valuable paper on Child-Study for Class Work. He entered a vigorous and thoughtful plea for the systematization of work in child-study that shall directly subserve the ends for which the teacher daily pursues the active work of instruction. Perhaps the central problem from which such child-study for class work could depart is that of the vital connection between mind and body, a problem in which the teacher is always intimately concerned. "The teacher should be interested in the health and growth of both mind and body. He is to find and control the conditions that influence the normal development of either of these." Hence "the physical and spiritual forces which have played about the pupil from his earliest days onward, the influences that are now pouring into his young life determining the character, direction and rapidity of its flow and the energy already stored up in this stream of consciousness, are all of concern to the teacher as features and factors which he must discover in the individual, bear in mind, and utilize in his training and instruction for future power and wisdom. Such child-study for the class room must constitute an essential element in the conduct of the recitation. In no other way is adaptation of the work of instruction and of the imposition of tasks, to be secured for each individual child. In no other way can the individual conditions of apperception and of physical energy be met. Moreover the teacher must be able, not only to

read the conditions of her work in the physical expressions and manifestations of the child, but also to see in the same the reflection of her own work upon the mind through the body. Never can we get away from this intimate connection between mind activity and the accompanying nervous functions. The teacher must be able, in each individual, to read the results of her work in terms of the latter as well as of the former. These were, perhaps, the central thoughts of the paper, which were most skillfully elaborated by the speaker. The paper also contained many suggestions as to how such a line of child-study could be arranged and carried out.

The two closing general sessions, Saturday forenoon and afternoon, were held respectively in Central Music Hall and the Women's Club Rooms. Very large and appreciative audiences were present. At each session the audience was favored by an address from Dr. G. Stanley Hall, who spoke on the Period of Adolescence, and on some of the Scientific Results of Child-Study, that are of pedagogical significance. It is almost needless to say, at least to those who are accustomed to Dr. Hall's charming power as a lecturer, who have already listened to his rich and suggestive lectures, that the audience drank in every word with the feeling that they were listening to a man who, by virtue of his method and its extensive application, has a right to speak with new, even revolutionary, views. One cannot but feel that it is doing the scientific laity a great deal of good to learn, as they have been doing in more recent years through the popularization of science, what it costs of effort and time and drudgery, to be able to put one's self in a position to speak with new light. This appreciation is now becoming the more apparent, that writers and lecturers, as does Dr. Hall, give their audiences some conception of the methods they employ to reach the results they present. Those who listened to Dr. Hall on this occasion had many of them heard him the year preceding, and had come again to get further help, light and inspiration. Probably nothing called out more emphatic expressions of appreciation during the entire congress, or did more to strengthen the faith in what child-study is going to do for human education and human life, than the wonderful lecture on Adolescence. The readers of the PEDAGOGICAL SEMINARY have had opportunity in its pages to gather many of these same thoughts on this and the other subject, so that we shall make no attempt here to epitomize the two addresses.

Some mention must also be made of the department meetings. Prominent among them was the Sunday School Department. In addition to the general session devoted to the pedagogy of the Sunday School already described, one session was held in the Immanuel Baptist Church. On this occasion the center of attraction was the paper presented by Prof. D. A. Kiehle, of the University of Minnesota, on Pedagogy in the Sunday School. The paper was well received and elicited an interesting discussion. The kindergartners held one session. The chief address was delivered by Miss Lucy Wheelock, of Boston, who was followed by Mrs. J. L. Hughes, of Toronto, Can., Mrs. B. Ellen Burke, of New York, and Misses Bertha Payne, Amalie Hofer and Nina C. Vanderwalker, of Chicago. The addresses were interesting and profitable, and with one exception evidence of a healthy interest on the part of kindergartners in the child-study movement. This exception seemed to the writer to appear in a tendency to dwell upon the points in which child-study has proven the infallibility of Froebel, even to the neglect of some questions of relationship of very vital importance to the child.

The department of philosophy of the University of Chicago furnished two programmes of very great value, especially to the practical

teacher. The first of these was a symposium on expert physical examination, including The Need of Examination and Supervision by Prin. Ida Mighell, Examination from the Standpoint of Ear and Throat, Dr. T. Melville Hardie, Examination with Reference to Physical Culture, Miss Kate Anderson, of the University of Chicago, Some aspects of Child-Development, Dr. W. S. Christopher, and Supervision from the Standpoint of Contagious Diseases, Dr. W. K. Jaques. With the exception of the ladies in the list just mentioned, those taking part on this programme are all prominent physicians of Chicago, who are interesting themselves in these questions, from the point of view of their specialities. This programme was presented Friday afternoon, in Kent Hall, of the University. The same evening, and in the same place, the second programme was given by the University. Two valuable papers were presented, one on the Child and his Environment, by Dr. Mead, and the other on Method in Child-Study, by Dr. S. F. MacLennan, both of the University of Chicago, department of philosophy. Dr. Dewey presided at both of these meetings. It is to him chiefly and to his interest in the cause, that the Illinois Society for Child-Study owes the hearty co-operation of the University of Chicago, whenever possible, in its congresses.

The Art Department held one session Friday afternoon. It was in the charge of Miss Josephine Locke, Supervisor of Drawing in the city of Chicago, whose interest in the child-study movement, especially in its bearings on the art development of the child, are well known, both through her recent articles in Arts for America, and in her still more recently published guides for the Chicago teachers, which represent the practical work of the schools of the city in the line of art. The chief papers on the programme were, Art and the Child, by Dr. G. H. Mead, of the University of Chicago; Children's Fears as Material for Expression and a Basis for Education in Art, by Dr. Colin A. Scott, of the Chicago Normal School; and Primary Art Education, by Geo. L. Schreiber, of the University Settlement. The discussion that followed these addresses was especially full of life and interest in this field which has already begun to yield so materially to the influence of child-study research.

The Mothers' Department held one session, but, unfortunately, all who were to take part on the programme, with one exception, were prevented from being present. The audience was very well repaid for its trouble, however, by the excellent paper of Mrs. Ellen Burke, of New York, and the interesting discussion that followed. Mrs. Burke's paper treated of Children's Secrets. Her thoughts were presented from the mothers' and teachers' point of view and dwelt upon the need of supplying the child with opportunity for the healthful exercise of his instinct for secrets. The paper gave a most forcible argument for the need of close sympathy for and understanding of child life, in showing that the obligation is a moral one, since our very indifference (as in the case of secrets) may expose the child to temptations of our own creation, too strong and subtle for him to withstand.

For the first time in three years a new set of officers was elected, many of the former desiring to retire. Prof. L. H. Galbreath, of the Illinois State Normal University, was elected president, Dr. S. F. MacLennan, of the University of Chicago, was elected secretary-treasurer, and C. A. Thurber, Dean of Morgan Park Academy, chairman of the executive committee. Later in the year both president and secretary-treasurer were forced to resign owing to withdrawal from the State.

On the whole the congress was a very enthusiastic and profitable affair. The membership of the society was very greatly increased and yet the sessions had been attended by a very great many of the older

members. In no respect could the work be said to be lagging in the State that had made the pioneer effort at State organization in the movement. The writer of this report, for three years secretary-treasurer of the society, has, since the last congress, which marked the beginning of the society's fourth year, withdrawn from connection with the society to labor in another State, and hence hopes to be pardoned some reminiscent reflections on its past history and work. The spirit which brought about the formation of this society was one of reform in the school rather than of contribution to scientific data. To be sure its constitution provided for the latter also; but after all it should be acknowledged that the desire to change that which violates the child's life in the school of the present was the predominant motive. This end the work of the society has kept pretty steadily in view. It had, indeed, few among its active members who can lay any claim to having made contributions to the fund of child-study materials. But it has many who believed in the righteousness of the movement, and who desired to give it practical assistance. It is largely through the early efforts of this society that the message of child-study came to be spread abroad over the entire State. Teachers were stimulated to study their own children in the school-room, mothers their children, and both ultimately to turn to the great field of child-study literature that could show them what has already been done to render child-life and growth more intelligible. To this end the publications of the society were issued. They reveal little of the work actually done by its members in the study of children, and that little is rather crude and of meagre value except as a stimulus to others. Their chief purpose was rather to furnish suggestions for observation, and articles for study. In these respects the publications contain very much that is of great value. Under the auspices of the society a large number of Round Tables have been formed, which have carried on the study of child-study literature, and in some cases have even grappled with small problems. Many mothers of the State, and a number of the women's clubs, have become interested in the work. There are also many schools in the State, where important changes have been wrought in the curriculum and method, and especially in the physical environment of the child, due to the work of propaganda carried on by the society. Finally the society has helped to influence materially the work of professionally training teachers. But on the other hand, at no time has the society as a body despite the dreams of some, ever been brought to the pursuit of a single problem that might yield something of scientific value. It may safely be doubted if, indeed, this should ever be its province. It is a good thing to have served in bringing about a more open and receptive attitude of mind on the part of many on all educational problems. It is a good thing to have helped many to see that these things still are problems. There is still very much work of this kind to be done, and in connection with efforts at securing the recognition of new needs, indicated by new truths, there is still a good field before the society

C. C. VAN LIEW.

BLOOMINGTON CHILD STUDY CONFERENCE, MAY, 1897.

Communicated by DR. W. L. BRYAN.

The week following the Chicago Convention, above reported, a three days' child study conference was held at Indiana University, at Bloomington, where, besides three addresses given by Dr. G. S. Hall, but not here reported, the following addresses, kindly condensed by the authors, were given.

CHILD STUDY AND THE TEACHER.

Supt. W. H. Sanders, Rensselaer, Ind.

The teachers of Indiana have done systematic work for several years along the lines of Psychology, Pedagogy, and History and Philosophy of Education. A very large per cent. of the teachers in the State have done some work of this kind in our normal schools, colleges, or universities. Almost all our teachers take the Indiana Teachers' Reading Circle Work, which has from its beginning, in 1884-'85, directed the teachers in these fields of investigation. The instruction given in county institutes and in township institutes, as well as the various associations, has been largely of a professional character. The knowledge and discipline coming from this continuous study of professional questions will be helpful to us in entering upon the new field of study.

But while the teachers of Indiana have done a great deal of work as indicated above, I, as one of them, cannot but feel that much of this study has been too theoretical and speculative. It has dealt with "the child in general," "the average child" and "the ideal child." Though we have been taught and have taught that the child has both a physical and a spiritual nature, yet we have frequently ignored the fact of the intimate relation and dependence of these natures upon each other. We have often proceeded as if the child were a spirit unincumbered by its physical being. Our proneness to theorize has too frequently taken us out of the true field of Psychological and Pedagogical research, *i. e.*, the individual children that come into our school rooms from day to day. The Indiana Child Study Society will, I believe, be a force that will bring us back to the pupils and direct us in a more careful, as well as a more sympathetic observation of their habits, tendencies and dispositions. If it succeeds in doing this it cannot help being of untold value to the schools of our State. Our previous theoretic study of Psychology will help us in making more acute observations than we could make without this study, and it will aid in the interpretation of the phenomena observed.

One line of work which, in my judgment, needs our study, is that of "Over Pressure." I believe it is not too much to say that there is scarcely a conscientious teacher or pupil in our schools who is not overworked in the discharge of the duties incumbent upon him in the course of his daily work. We who have as a part of our duty the preparation and enforcement of courses of study, have not sufficiently regarded the physical welfare of teachers and pupils. The quantity of work is, in many cases, too great, and in other instances the work is too difficult for the advancement of the pupils. This leads to worry

and a useless expenditure of energy. Teachers and pupils alike are up late at night preparing lessons, as they think for the following day, but in reality they are depriving themselves of needed rest and refreshment which impairs their strength for the duties of the morrow. Again the work required is not adapted to the changing physical and mental condition of the children as a result of growth. To any observant teacher or superintendent it must occur that the great amount of nervousness, headache, nose-bleed, etc., which he sees from day to day is not without cause, and furthermore that the cause lies very near the schools. Both teachers and pupils have certain social duties to perform as well as school work to do, and we often take no account of this in the assignment of work to be done. Social duties cannot be wholly neglected. Some time and energy will be devoted to these, and hence less energy is left at the disposal of the school. This pressure from school and social duties combined is making rapid progress toward undermining the physical well being of our best teachers and pupils.

CHILD STUDY IN THE PUBLIC SCHOOLS.

Supt. Wm. A. Millis, Attica, Ind.

1. "The abiding results of child study must be sought in the psychological laboratory. Scientific child study by the teachers in the public schools is impracticable. Nor do I think that the science of the child will be developed in the normal schools for the reason that they are technical rather than scientific institutions." "This purely scientific study of child nature is practicable only in the university laboratory, by individuals with special aptitude for such work, or in field study under the immediate direction of the specialist."

2. "To our normal schools belong the questions of the wisest adjustment of studies and methods of instruction to child nature. The normal school is in a very real sense an educational experiment station—a center for investigation of the problems of child culture, of proposed instruction, of the problems arising in the art of teaching. This the public school cannot and ought not to be."

3. "Scientific child study belongs to the university and the specialist; the adjustment of educational means to the nature of the child as determined by the scientist belongs to the normal school; the modification of this adjustment to fit the nature of the individual child belongs to the teacher in ranks. The last is the child study that belongs to the public schools,—namely: a study of the particular conditions entering into the lives of the pupils and which must be estimated in the adjustment of the accepted appliances and methods to their development."

4. As a means of inspiration and nurture, teachers should be kept in close touch with the investigations in progress at the several centers of child study. The questions raised should be known. The teacher who possesses a clearly defined notion of one or more of the larger problems in issue, will unconsciously awaken to new truths and to new life. It is an excellent thing for the teacher to select some one of the "wise questions" of the investigator for her own and keep it as a kind of interrogation point over her work. "Original investigation" must be left to the laboratory.

5. "But chiefest of all, the teacher must *know* her pupils. She must know their capital stock, their resources and liabilities. She must know their physical condition, their nutrition, their nerve capacity, their defects. The home life of the child—the home atmosphere, family temperament, social standing, parental attitude toward school and culture institutions in general, and the degree of individuality per-

mitted the child in his home life. Has he private property in anything, even in his own feelings? These are the questions which the teacher can and ought to investigate. She ought to know what her pupil reads, what he has seen and heard, what games he plays and how he plays them, whom he worships as his hero, and particularly the boys and girls he admires. She ought to know how he has been disciplined and for what reasons. She ought to know how he spends his leisure hours and vacations, what he likes and dislikes, and why, his interests and his apathies. In short, the teacher should know her pupil as she knows her own soul at confession. Such intimate knowledge of real live boys and girls will beget that loving comradeship that is better than all science and method and apparatus. This is the school room child study that is of most value."

CHILD STUDY FOR THE GRADE TEACHER.

Supt. B. F. Moore, Frankfort, Ind.

One difficulty in the way of getting the grade teacher to take up child study is lack of interest. Teachers are not interested because they do not realize that such a study has any direct bearing upon their immediate work.

To meet this difficulty the beginnings of child study for the common school teacher should be such as will appeal to her in the direct line of her work. Teachers are mainly concerned in processes of teaching; in applying courses of study to the individual children in their schools, rather than determining what courses of study shall be. The child study of greatest interest to the teacher will not be some of its more scientific phases, but will be such a study as will enable her to grasp more clearly the problem before her; as will open up to her more rational methods of procedure; as will enable her to more intelligently apply the matter in hand to the individual pupils before her. Child study must be brought to the plane of the common school teacher if she is to become interested in it.

Many of our teachers have been carrying forward lines of child study from the above standpoint. In all cases, where systematic observations and tests have been made, it has been to determine some particular element in the child's make up, and always with a view to changing processes of dealing with the pupils as the result of the observations or tests showed it to be necessary.

CHILD STUDY AND THE COMMON SCHOOL TEACHER.

Professor Howard Sandison, Terre Haute, Ind.

I. The world has been given to periodic movements. Examples are Buddhistic movement, the Mohammedan reform, the Crusades, the revival of letters, the phonic movement, the object lesson movement, etc. Along with these belongs the child study movement. Each of these movements expresses the dissatisfaction of the race with the existing state of affairs.

II. How the child study movement differs from the other. Each of the other movements had as its center of interest a limited object. The Crusades related only to the religious life, and this in one of the smaller aspects. The object lesson movement related only to education, and to a limited field in that. The child study movement has as its center of interest something far more fundamental and comprehensive—the child with the full range of its possibilities.

III. The movement is not new. Throughout the history of the race the child has been an object of interest and study. All the great reformers have given emphasis to the child and his interest, many of

them have pointed out the necessity and the advantage coming from a study of his nature. A few have gone far enough as to indicate briefly plans. As early as the time of Plato definite hints concerning the study of children were given. Quintillian and Rosseau have attained more definite results. Froebel based his system directly upon the study of children. Notwithstanding this the movement has assumed general importance only within the last few years.

IV. Lines of Child Study work.

a. The strictly scientific study of children. The child is as truly a subject for scientific investigation as is the plant or animal. This scientific study may not, however, have immediate reference to pedagogy.

b. Scientific study and experiment in the laboratory having direct reference to pedagogy. Experiments may be made in the laboratory, and investigation in children over wide ranges of territory, in order to obtain conclusions which may be embodied in pamphlets, books, magazine articles, etc. These being placed in the hands of the common school teacher, become valuable guides on account of their educational doctrine.

c. Direct work by the common school teacher. The common school teacher in charge of a room, owing to her intimate acquaintance with the children and the mutual sympathy existing, has opportunities for study greater even, than the scientific investigator in the laboratory. The direct study made in the school room shows itself to be of three kinds; one of these is the following: the teacher by conversation with a child, no others being present except the stenographer, may, in a sympathetic way, obtain from the child his ideas, feelings and choices concerning any region of knowledge, as, for example, his ideas and feelings concerning the world to come, or his ideas concerning books, plays, etc. A second kind of work is the observation to be made by the teacher upon all the children in the room as they move forward in their daily work. This can be truly scientific in its nature, involving close observation, hypothesis, deduction, and application. It may also be studied in relation to schoolyard plays, home environment, etc.

A third kind of work, which the common school teacher can carry on, is one extending beyond any single room. This is a kind of work intended to test the attitude of children in the different grades toward any subject. For example, a certain experiment in physics may be taken. This being shown in each grade, the children may be led to ask questions or to make statements concerning it. If a large number of such questions or statements are collected and classified according to the grades, the prevailing interest of each grade concerning that kind of work may be discovered. This will be of value in deciding how to organize that line of work in the school.

PRACTICAL VALUE OF CHILD STUDY.

Myrtle L. Smyser, Indianapolis, Ind.

Child study is of practical value to the teacher.

First. In that it arouses in the teacher a love for children and love for her work, without which there can be no really successful teaching.

Second. Discipline becomes more natural and easy to one understanding the general principles of fatigue, periods of maximum growth, adolescence, etc. Fatigue is important in the arrangement of programmes. Fatigued children are slow of comprehension, restless and irritable. Change of work at the proper time is necessary to get the best results with the least strain to teacher and pupils. An understanding of the periods of growth is important in the arrangement of school

courses and in the work of teachers with individual children. Variation of mental and physical power at different ages, seasons of the year and hours of the day, is a valuable study for any one who deals with child life.

Third. Instruction from one in sympathy with the child's mental, moral, and physical nature, makes possible a deeper, nobler development of the highest powers of the child. The Emotions and the Will—the art of living and loving are too often neglected.

Not the least of the practical results of child study is the effect it will have upon the profession of the grade teacher. Teachers are but children of a larger growth. It will be found that the best work is not separable from health and happiness. Love of work is necessary, and child study adds so much of vital interest that it cannot help but attract the class of teachers so desirable, yet so difficult to obtain.

Dr. C. C. Van Liew, Normal, Ill.

In his opening remarks Dr. Van Liew urged the need on the part of teachers of acquainting themselves with the literature of child study. The principles of their practice are necessarily of the most general nature, and in order to appreciate their true significance the teacher must be able to recognize them as they appear modified by the phases of life and growth that are peculiar to the child. We need sympathy with child life and child nature to be able wisely to apply the profoundest law that the scientist or philosopher ever formulated. Sympathy with the individuality of the being that he is trying to influence is evidence of the presence of the artistic element in the teacher.

Another field of interest for the teacher in this movement of child study is the study of the individual. This is, in fact, pre-eminently the field for the teacher's interest in her own study of children. The close and sympathetic study of individual personalities cannot fail to reveal not alone useful information for the training of that child, but intrinsically interesting and valuable knowledge of child life. It may not be new to the science; but its closeness to life itself is the great fact in its favor. It is the student's method of the laboratory transferred to the school room, which thus becomes to the teacher, not alone a shop for turning out work, but as well a laboratory for the constant investigation of the forms of life she is most intimately interested in. And the teacher needs this cultivation of the power of recognizing the distinctive features of the beings with whom she deals, and the individual conditions under which she works, as well as the worker in any field. Often in conjunction with this study of the individual, the teacher finds it to her advantage to be conscious of the problems which are at times uppermost in the minds of the scientific investigator. For example, we have been shown that Dr. Bryan's problem of the plateau, undoubtedly has a bearing on certain work of the school room, and that it is very suggestive to the teacher in certain phases of her work, offering a point of view in the observation of the results of her own work, and giving her an opportunity to contribute to the practical testing of certain child study problems in a way that no one else can contribute.

But probably it is by no means too early in the history of the movement to expect of the work of child study some contributions that are able to affect the work of education. In fact, there is a great deal that has already been revealed that should be a part of the professional knowledge and equipment of every teacher. The entire body of knowledge relating to the physical growth and development of the child, gives, perhaps, as good an example as any of how imperative it is that the teacher be informed as to the recent revelations of child study.

Recent studies in imitation offer another illustration of the essential contributions that are being made to the practical field of the teacher. The results of these studies have been pushed far enough to make suggestibility and imitation not merely side issues in the development of the child, but positive factors, worthy of recognition as educational principles. The best that we possess in all our arts of expression, from physical mannerisms to speech, composition and art, are, in so far as they become efficient and of ready command, due to the principle of unconscious imitation. It follows that in teaching the child to read, write, speak correctly, or to perform any one of the common school facilities that add to the child's power of expression we should make a far greater use of this principle of unconscious imitation. As well teach the child to have an agreeable expression of the face by making faces for his conscious imitation, as to have him learn to read or write by rule instead of by the use of his motor instinct. The expressive environment begets the expressive motor response in the child. Take care of the copies and the child will grow up to their standards. Finally, this principle has a further field of application for the teacher in that it shows the effect of the personal suggestions of the environment upon the child's emotional attitude toward his work. The school environment, or the home environment, becomes positive or negative in its emotional effects according as the suggestions which the child draws from it are such as recognize what power he has, as encourage effort, as inspire confidence in that already accomplished and possessed as something positive, or as they rather call to mind his deficiencies, how far he is behind others in his accomplishments, leaving him with no sense of power possessed, or of worthy work accomplished. It is well worth considering to how great an extent the unfavorable emotional tones of the pupil are due to thoughtless, unwise or vicious suggestions of the school environment.

CORRESPONDENCE.

To the Editor of THE PEDAGOGICAL SEMINARY:

Dear Sir,—

Mr. Partridge, in a foot note to his interesting study on "Blushing" (PED. SEM., Vol. IV, No. 3,) says: "The literature of the subject. . . . is meagre." Certainly it is, but it does not appear that he has exhausted the material at hand. I wish to call attention to a helpful monograph¹ published somewhere in the eighties (the date is not given, but a copy is in my possession at least 14 or 15 years) whose author discusses the subject in a rather thorough manner and arrives at conclusions similar to those of Mr. Partridge. I translate a few extracts for the benefit of those interested in the subject.

Henle takes exception to Darwin's explanation of the phenomenon of blushing, and also rejects the theory that it is due to an acceleration or stimulation of the action of the heart. He shows that a closer microscopic examination of the tissues composing the walls of the blood vessels reveals the fact that there are involuntary muscles of an annular form imbedded in the elastic fibrous tissue. "The last doubts as to the contractility of the blood vessels have been removed by Bernard . . . who proved that these vessels are controlled by the nerves in the same manner as the voluntary muscles." Consequently, mental states may cause contractions or relaxations of the capillaries, which in their turn will produce a temporary decrease (pallor) or increase (blush) of the volume of blood in these vessels.

That the blush is, in the main, restricted to the face and neck, cannot be explained, as Darwin does, as an effect of the "concentration of attention to the exposed part." "If concentration of attention upon the face were cause enough to increase the quantity of blood in the capillaries of the face, we ought to blush whenever we look attentively at our face in the mirror." And "if we fix our gaze upon the pretty hand of a lady who is conscious of this distinction, we may never observe a blush on her hand, but only, perhaps, in her face."

While this argumentation may be regarded as somewhat superficial, Henle's further statements are interesting. "When it is asked," he says, "why the blush appears mainly and primarily in the face, we must consider that this peculiar localization of effect is characteristic of every case of dilatation of the blood vessels under the influence of an emotional state. I believe to have found an explanation of this fact. The nerves of the blood vessels do not stand alone in this respect; as I have had occasion to show in one of my lectures on anthropology, the nerves of all voluntary and involuntary muscles, the sensory nerves of the skin and even those of the glands, whenever they are at all affected by mental states, participate in the emotional excitement in the same order, viz.: first those of the head (facial muscles, lachrymal gland), and then, in proportion to the intensity of the feeling, from the head downward. The common cause of this sequence must be found in the anatomical arrangement of the nerves of the body: those that innervate the upper part of the body being in greater proximity to the seat of psychic activity than those controlling the lower

¹ "Ueber das Erroethen," von J. Henle, Breslau, S. Schottlaender.

parts. . . . The characteristic feature of the blush of shame, therefore, is not the fact that it covers the face, . . . but that the face blush is the principal, often the only outward sign of the emotions which it signifies. This peculiarity can only be explained by the particular character of the feeling of shame, in distinction from other blush-producing emotions. . . ." (Cf. Mr. Partridge's article, p. 390.)

"The mental state which produces the blush proper, belongs to the class of depressing emotions. The dread to be observed in public, which colors the cheeks of timid maidens (and youths) even on entering a place of social intercourse, or at a greeting in the street; the feeling of alarm at being tempted into revealing a secret, or at the possibility of being caught in an untruth; yes, even the apprehension of arousing the mere suspicion that there is anything to be concealed or that one has been guilty of prevarication: all these are emotions which differ from *fear* of a threatening danger only in degree and mostly also in duration. And it often happens that a blush is immediately followed by the pallor of fear, or that the latter occurs alone when the former might be expected. Even the feeling of shame proper, especially when it is awakened by a surprising, alarming situation, may find expression by a pallor spreading over the face rather than by blushing. How, then, can it happen that moderate fear and terror will make us blush, as a rule, while stronger fear and more intense terror will cause us to turn pale? The explanation of this contradictory behavior is found by remembering that pallor is produced in one of two ways, either by contraction of the blood vessels, or by momentary cessation of the heart beat. Contraction of the blood vessels occurs, as was shown above, in consequence of depressing emotions; but fear and terror, in order to produce this effect, must reach a *certain degree of intensity* and are then accompanied also by other symptoms, such as contraction of other involuntary muscles (of the skin and lungs), and decrease in the power of control over the voluntary muscles (trembling). A temporary *dilatation* of the vessels, however, seem to be the first result of every *less* serious disturbance of the equilibrium of the mind, even of a passing alarm, of a merely incipient fright. If, under such conditions, a pallor is observed instead of a blush, this may be explained by an abnormal condition of the heart, which with many individuals changes its beat from very insignificant causes, and, by a sudden convulsion, or a temporary paralysis, may be prevented from dispatching the normal quantity of blood to the arteries. That the blush is an effect of relatively weak emotions, is also proved by the fact that this one change of physiognomic expression remains the only one . . . the muscular movements which accompany the blush, the drooping of the eyelids, the shifting glance, not being direct reflexes of the emotion, but (like the attempt to conceal one's self or at least one's face) voluntary and purposive actions. . . . It will be plain, then, why I distinguish the feeling of shame only quantitatively from other depressing emotions, so that no sharp line can be drawn between them."

In this connection, it will be instructive to consult Wundt's remarks on the physiology of blushing;¹ his line of argument being very similar to that of Henle, though the latter seems to claim priority for his theory.

Respectfully,

MAXIMILIAN P. E. GROSZMANN,
Comenius Grove, Va.

¹"Grundzuege der physiologischen Psychologie," von Wilhelm Wundt. First edition, 1874, Leipzig, Wilhelm Engelmann.

LITERATURE.

Thomas and Matthew Arnold and Their Influence on English Education, by SIR JOSHUA FITCH. N. Y., Scribner, 1897. pp. 277.

This very brief account of father and son is attractively put together, but the picture of the elder Arnold gives nothing of consequence not told, as we remember, in Stanley's life; while the story of Matthew Arnold is compiled from many literary notices and colored by a long, personal acquaintance. The services of the latter for education are, of course, chiefly dwelt on; but perhaps the best chapter in the book is devoted to his literary work.

The Golden Age, by KENNETH GRAHAME. N. Y. and London, 1897. pp. 241.

The olympians or parents and "grown ups" generally were regarded by the children as their betters by a trick of chance only, but unable to make use of their luck because their lives were so slow, senseless and void of interest. What did they know of Indians or pirates, of fairies or buffalo, although in the child's mind the woods were full of them. These anæmic adults dragged out an aimless existence, talking of inanities they called politics, society and what not, and were really further from children than the kindly beasts. They were a blind fate, ruling by strange and alien laws, who could not understand what real life was. From this general standpoint the incidents of the daily life and conversation of a group of bright children are described. The book is charming and animated by a real and deep sympathy with children, but fails a little in the second half, as if the author or his unique vein had begun to run dry.

A Working System of Child Study for Schools, by MAX P. E. GROSZMANN, PH. D., Syracuse, 1897. pp. 70.

Child study is for this author merely a new name for an old thing. He has little interest in researches based on numerous data, but tells us of special methods of gradation, reporting on thirty points, including sense defects, whether each child is musical, artistic, lazy, nervous, observant, etc. Children are often thought dull by one teacher and shy by another, brilliant by parents and dull by teachers. Dr. Groszmann's booklet, while not helpful to the expert in child study, will be found suggestive to teachers in small private schools, where individual traits of body and soul can be studied and brought out by a scheme of reports that are illustrated in full.

The Child Life. Primary Reading and Education Chart, edited by MARY E. BURT. Ginn & Co., 1896.

This is twenty-seven large and reversible charts containing a complete course of primary study, with many original drawings and copies, sometimes colored, from the great masters. It makes possible an interesting experiment in class, as opposed to individual work. The results ought to be of value. The ensemble makes a favorable impression.

La Puberté chez la Femme, par C. H. BARBAUD et C. H. LEFÈVRE. Paris, 1897. pp. 234.

Puberty is here treated physiologically, clinically and therapeuti-

cally. The effects of climate and other causes that accelerate or retard its advent in girls, is first discussed, then follow a characterization of the difference between puberty and nubility, the effects of precocious marriages, the physical and mental peculiarities of this period, its irregularities and diseases and their treatment. Nothing new is attempted, but the book is the best general summary of the traits of this important period of life known to us. The abnormal or morbid side is a little too prominent for general reading, perhaps even for greatest pedagogical utility.

Thirty Years of Teaching, by L. C. MIALL, F. R. S. London, 1897. pp. 247.

The author has a brief chapter on each or nearly all of the topics of instruction with suggestive discussion or punishments, plain speech, reading aloud, Froebel and Pestalozzi. All in all it is a charming and suggestive book, but not by any means a remarkable one. Some of the topics are particularly disappointing and show little knowledge of the best work done elsewhere. This is particularly the case in the discussion of school museums, nature study and the relation between pedagogy and psychology. "In lecturing, make no introductory remarks, and rarely any closing ones; go to nature rather than books; be accurate." Many such well known principles are freshened up by new illustrations in this rather journal-like and scrappy, but very interesting book.

School Interests and Duties, by ROBERT M. KING, Instructor in the Indianapolis High School.

Whether this is a very old or a very new book, it is impossible to tell, as, like so many of its class, it bears no date. The topics are old and the treatment is conservative, and on the title page we are told that it is developed from Page's "Mutual Duties," and from various reports, documents and bulletins. The chief topics are duties of parents, teachers, officers, school architecture, hygiene, libraries, morals, etiquette, celebrations, dictionaries, institutes, reading circles and public opinion. The author aims at nothing startling or novel, was no doubt himself much developed by compiling it, and every teacher will find it handy and practically suggestive.

Organic Education, by HARRIET M. SCOTT, assisted by Gertrude Buck, Ann Harbor, 1897. pp. 291.

This manual for teachers in primary and grammar grades is by the principal of the Detroit Normal Training School and a high school instructor in English. Its purpose is to report a plan of work that has been some years in operation. The brief first part gives the philosophical principles, and the last is a detailed statement of how the plan is carried out. It illustrates the nomadic or American Indian period by Hiawatha, the pastoral or early Aryan period by Karl, the Persian or agricultural by Darius, the Greek by Cleon, the Roman by Horatius, the Saxon by Wulfe, the French by Gilbert, the Spanish by Columbus, the English by Raleigh, the American by the Puritan. For each of these there is first an analysis of character, then "ethical aims," then, where feasible, "ethical ideals" embodied in literature, or a general statement of material. For each there is also a discussion of appearance, clothing, home, school, social and industrial life, the State and religion. It is a culture epoch plan with excellent new variations and requiring a great deal of work on the part of the teacher, but the references are all given by the score. We doubt if many teachers would or could carry out this attractive plan, on account of the laborious reading it would require to do it well.

Bibliography of Education, by WILL S. MONROE, A. B., N. Y. Appleton, 1897. pp. 202.

This is No. 41 in the International Educational Series, is dedicated to Dr. Henry Barnard, and contains titles of 3,200 books and pamphlets arranged under twenty-two general heads, most of which have many sub heads. On the whole it is, as the latest should be, the most valuable of several now before the public, not excepting that of the writer. The author has had the preparation of his collections under way for sixteen years, has made an excellent index and occasionally gives a few lines of characterization of more important work, usually in the form of quotations. It was no doubt wise to exclude periodical literature, but the necessity is to be regretted, most perhaps in the field of child study and university work, where the most important of all literature is perhaps periodical and the absence of which makes those rich fields seem rather jejune.

Matka and Kotik: A Tale of the Mist Islands, by David Starr Jordan, President of Leland Stanford University. San Francisco, 1897. pp. 68.

This elegant little book, with nearly four score pen sketches and seal photographs, and more than a score of "personae," is a story of seal life, dedicated to the other members of the Behring Sea Commissioners for 1896. Matka is the wife and Kotik the child of the great beach master, Atagh, and besides many relatives are Amogada the walrus, Sivutch the gray sea lion, Eichkoa the blue fox, the auk, sea parrot, gull, with a chorus of various animals, volcanoes, wind and sea. The story is a sprightly account of the interesting habits of the seals at the breeding season, and of animal life in the Alaskan region. The idea is happy and unique, and the book will delight every child, to say nothing of "grown ups."

The Great Didactic of John Amos Comenius. Now for the first time Englished, with Introductions, Biographical and Historical, by M. W. KEATINGE, B. A. London, 1896. pp. 468.

The greatest work of the great School Reformer is here presented to English readers for the first time. "The present version of the *Didactic Magna* is a close paraphrase of the original Latin in the Advocates' Library, Edinburgh. The introductions are based upon original research and on the best German authorities. They embody a fuller account of Comenius's life and works than has hitherto been accessible to the English reader." The introductions comprise some 150 pages and are scholarly contributions to educational history. The translation is clear and forcible, and bears the stamp of accuracy in reproducing the thought without undue slavery to the literal form. Notes and a bibliography are appended.

It was not without reason that Comenius maintained that this book set forth "the whole art of teaching all things to all men." For the chief contributions of pedagogy since its appearance in complete form in 1657 have been to illustrate these principles, to repeat them in new form, or from inductive study to show their application. The importance of the original and the excellence of this translation are both suggested by the words of Comenius on the title page. "Let the main object of this, our *Didactic*, be as follows: To seek and to find a method of instruction, by which teachers may teach less, but learners may learn more; by which schools may be the scene of less noise, aversion, and useless labor, but of more leisure, enjoyment, and solid progress; and through which the Christian community may have less darkness, perplexity and dissension, but on the other hand more light, orderliness, peace, and rest."

W. H. B.

THE PEDAGOGICAL SEMINARY.

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EDITORIAL.

Certainty is one of the chief quests of science, one of the most fundamental needs of practical life, and the great theme of that department of philosophy commonly called the "Theory of Knowledge." It is generally studied either abstractly and subjectively or else experimentally. I do not know anywhere any serious attempt to treat the feeling for certainty genetically in children. Mr. Small's article thus opens essentially a new field, and, like so many other studies of children, besides its positive contribution in the way of theory, of co-ordinating the psychic operation of children and savages, must surely tend to bring epistemological discussion down from abstraction nearer to the actual facts of nascent consciousness. Modern epistemology, while often arrogating to itself the claim of being "science" in a pre-eminent sense, has contributed almost nothing save to intensify a more or less normal ephebic ferment, and to increase in individuals the voracious "appetite for boiled cobwebs" still occasionally found among our most gifted youth as it was in Theaetetus. Its theme is so practical and interesting, that it is unfortunate in many ways that the mode of treatment has been so scholastic and mediæval. Mr. Small's data, limited as they are, show the early interest and great moral import of the theme; and both the first part and the final part on oaths, which

also have never been thus studied, suggest new fields and themes for philosophic thought, or supply apt and characteristic cases (like, *e. g.*, the knife incident p. 333), and altogether open up a psychological theme toward a wider field of anthropology.

Mr. Kline connects truancy from school with the migratory instinct, shows an interesting relation to food, spending money, age, growth, etc. He has studied the problem and data of truant schools, the bodily development of truant children, shows the beginnings in the aimless instinct to follow anything moving, the strange attractiveness of water, the love of fields, of change, the blind impulse to go, the effect of optimum temperature and weather, of dullness, of home life, age and duration of the habit, etc., with suggestive charts and tables.

Dr. Gould (p. 421) describes a number of cases of child fetiches of remarkable interest, which, as he says, although allied with the doll instinct (*PED. SEM.*, Vol. IV, p. 129), are, "in some respects, quite dissimilar."

Professor John Dewey contributes a valuable article criticising Mr. Phillips's paper on "Number and its Application Psychologically," in the last number of the *PEDAGOGICAL SEMINARY*, which, like everything from the author's pen, will command the most careful consideration of all interested. The editor regrets that the paper was received too late to be placed earlier in the present number and in large type.

Notes on nearly forty new publications conclude the present number.

METHODS OF MANIFESTING THE INSTINCT FOR CERTAINTY.

By M. H. SMALL, Fellow in Clark University.

PART I.

Certainty is a prime condition of living. It is at the root of all human confidence, the basis of all social compacts, the ground of justice, the aim of science, the end of every form of philosophical thought. No one can say just when, or where, or in what condition it begins. It seems to be one of the first instincts of conscious life. It may spring from the awakening of hereditary forces slumbering in protoplasm. It may come as a natural anesthetic for the pain that follows the first consciousness of an incomplete organism.

In the life of a child, the first few months, when compared with the psychic life of later periods, seem to be a stage of blank ignorance. Whether this interval bears the marks of the dream state, or has something of the nature of a long reverie, or is actively conscious in a way that no one understands, it is full of sense impressions. Out of these, a little later, grows the impulse for naming things. The names are furnished by trusted friends and things do not change with respect to what they are called. This is the basis of the universal credulity of childhood.

While the naming is in progress, the properties of things are being slowly differentiated. One of the very first and one of the most striking of these is motion. The perception of this in objects awakens the idea of change in their spatial relations. Thus the whole economy of a child's life tends to enforce upon him the thought of the instability of his environment. The thought is painful, for in the identity of the relations of things is the assurance of his own orientation: it marks the transition from perfect trust in the testimony of others to personal inquiry as to what is true; it is concerned with the border land between what has been believed to be real and what is vaguely glimpsed as possible. All this thinning of the psychic mist precedes the coming of what may be called the wonder stage of child development. In consequence of the concept of change in things as possible and of its natural concomitant, doubt, old forms of expression are modified. "Could it be?" "Do you suppose it is?" "Perhaps it is," or "It might be," are substituted for simple terms of direct assertion and are followed by specu-

lations based upon hypotheses contrary to the immediate conditions.

In the power to invent and work out these hypotheses, and in his ability to make voluntary changes in the places of objects, the child finds his escape from the thought of being swallowed up by the changes produced by natural law. In a degree it is the substitution of internal for external force, and with this idea, there comes a sense of control over conditions, which helps to a feeling of the identity of self. This might be sufficient to remove the pangs of unrest and leave in their stead a feeling of certainty that things must remain as they are placed, but for the fact that conflicting opinions are constantly arising over simple matters because the total knowledge and experience of any two persons usually leads to a different apprehension of the conditions involved in any matter of doubt. Thus proof, a process or series of acts by means of which facts, forces, and things are made to submit themselves to such reduction as the individual mind deems sufficient to subordinate them to its own control, is made necessary.

This paper aims to present :

1. Some of the methods employed by children in settling doubtful questions.

2. Certain parallels to these methods, gathered from a wide, but fragmentary literature, of the customs of the race.

So far as possible, the following records are given in the words of the original writers, although greatly condensed. The classes which follow are practically in the order of their natural development.

I. THE STAGE OF WONDER, POSSIBILITY, DOUBT, AND HYPOTHESIS.

1. M., 22 months. Dod make baby ? Dod make papa and mamma ? Dod in Rich's house ? Up in sky ? Was told that God is too large to be seen. On going to bed a month later, refused to say "God bless baby." Gave as the reason, "Dod too big." 2. M., 3. "Mamma, can God see me ?" "Yes." Looked out of the window. "Mamma, I can't see God and so God can't see me. You must be mistaken." 3. F., 3. Is there a Jesus up in heaven ? Mamma says there is and that he takes care of every one. Do you think so ? 4. F., 3. I took my little niece to the Catholic church to see the "Crib." She thought the sheep and the shepherds were alive and she asked many questions, showing that doubts were already in her mind. 5. F., 3 and 4. Their papa must cross a lake with a heavy team. M. "Poor papa will be drowned in the dark water, and then what shall we do ?" O. (3.) "May be God will help him out." 6. F., 4. How will Jesus come ? Will he have a pair of stairs ? 7. M., 4. I wonder if God has forgotten to close the faucets up in heaven. I think he would n't let it rain so long if he had not. 8. F., 3. Mamma, are you sure there is a Santa Claus ? Perhaps there isn't anyway. 9. M., 4. I ain't going to hang my stocking. Tom says there's no Santa Claus, and may be there ain't. I never saw him. 10. M., 6. "Do you say there ain't no Santa

Claus?" "Yes." "Then there ain't no God." 11. F., 3. Asked if she loved God. Replied, "I don't know that man. He isn't so nice as Dr.— anyway." 12. F., 2 years 6 months. She had collected carnellians. One day she found a piece of lead pipe, examined it, and said to her mother, "No stone." "What are?" 13. F., 3. How can papa be in the picture, and in the grave, and up in heaven at the same time? 14. F., 4. Uncle told her that he once had a little girl about her size, but that she was in heaven now. After a moment, she said: "My grandma died, too, but she did n't go to heaven. They just put her in the ground." 15. M., 2. "Who is that man?" "Why that is my father." "Mamie, how?" 16. F., 3. I wonder when that rocking-horse eats. 17. F., 3. If I had wings, could I fly up and see God? 18. M., 4. If I were to go to the top of that mountain, could I reach and touch heaven? 19. F., 7. Could I reach heaven if I went up in a balloon? 20. M., 4. There was a crash of thunder. "What's that? Where did it come from?" asked W. He was told that it came from heaven, and he explained it by saying, "May be it is God playing on his piano." 21. M., 4. Heard thunder. Said, "May be they are firing torpedoes up there." 22. F., 3. I wonder if the stars are gold. 23. M., 4. Cried. Asked why, said, "The moon is looking at me, p'raps God is in the moon and I'm afraid." 25. M., 5. Saw moon through tree-tops. Told father he could get it with a long ladder. 26. F., 4. Auntie, tell me about the day before there was n't any day. 27. F., 5. One night while repeating the Lord's Prayer, wondered what "forever and ever" meant. Mother compared it to an endless day. The child tried for days to get a concept of endless things, and at last decided that such a thing was not possible and mother did not know. 28. F., 5. Heard teacher say the earth is round like a ball, and that if one starts from a given point and keeps on without change of direction, he will return to the starting point. She did not believe it, for she said one would fall from the side as from a ball. 29. M., 4. Father drank. "If my papa don't be a better man, may be a comet will come and take him." 30. F., 4. Interested in picture of a mermaid. One day when walking near river, heard a noise. Explained it by saying: "May be it is that girl fish." 31. F., 5. Heard bullfrog. Thought it a cow. Was told that the sound was not like the voice of a cow. Answered, "But this may be a cow laughing." 32. M., 4. Asked by mother what made his head so dirty, replied, "I guess it is some of the dirt God had left when he made me." 33. F., 4. If they have button hooks in heaven, I guess I don't want to go there. It takes all the time to put on my shoes. 34. F., 4. Papa, do squirrels die like other folks? 35. M., 5. I told him that George Washington never told a lie. He looked up and said, "Um! May be he did and may be he didn't never tell a lie." 36. F., 4. Told about Santa Claus. Said, "Mamma, that is a play story." 37. F., 3. Asked to see the finger bowls. Was told that they had been eaten. Indignantly asked another, "Were the finger bowls eaten?" Seemed fearful that the statement would be corroborated. 38. M., 5. Previously had perfect faith in Brownies. At this age asked, "Mabel, are there really and truly real Brownies?" 39. F., 5. When papa sometimes said things like, "I enjoy a dish of fried snowballs in winter," she would look up in a doubting way and say, "He said fried snowballs, he did." 40. F., 5. "I don't t'ink it is true." "You don't think what is true, Mary?" "Well, Mina said she read when little birds go to Africa and it gets cold, worms go right into their mouths. Mary guesses it is a joke." 41. M., 4. Dreamed that a savage dog bit him. Awoke screaming. Was pacified with difficulty. Next day

protested that his fingers were bitten off, although they were before him. 42. F., 5. "Mamma says so but she doesn't always tell the truth." Later the mother told a fact and the child remarked, "That may be, but you have fooled me before." 43. M., 6. I wonder why people blow a fire to make it burn, and a match to make it go out. 44. M., 6. "What makes the wind? Why God puts his mouth to the sky and blows his breath down on us." Then he explained that God has a mouth big enough to reach across the sky, and illustrated the making of wind by expelling his breath. I could not convince him that he was wrong.

Four hundred and fifteen cases like the preceding have been studied. 299 of these picture the children face to face with possibilities and hesitating which way to decide. In many cases there is little evidence of a positive opinion. In the greater number a blind groping after certainty is apparent. Simple explanations easily suffice. 116 cases illustrate speculations about what would follow "if" existing conditions were to be changed.

Perhaps it is but natural for the first questions of perplexity to be asked about God. Common objects are seen and then named. God is an oft repeated name for which no object appears, and this difference becomes a cause of anxiety. In records like 6, 17, 20, 21, 22, 30, 31, 32, and 33, the idea of association is very marked. 4, 6, and 23, although showing none of the lines drawn by Straton and the Stoics, reveal the hylozoistic impulse of childhood. 2, 6, 20, 23, 30, 31, 34, and 44 present the anthropomorphic element. 13 and 14 hint at the importance to childhood of a place-relation for things and show that the impossibility of the same thing existing in two places at the same time is glimpsed at an early age. The idea of a paradox appears in 43, and the struggle after the limits of time, in 26 and 27. The questionable practice of awakening doubt through jokes based on statements contrary to the natural relations of things is illustrated in 36, 37, 39, 40, and 42.

According to popular judgment, children have but little ability to reason. It is erroneously thought that broad knowledge is requisite for such an act. A close examination of these records and of the excellent ones of the Worcester Normal¹ has brought a strong conviction that the steps taken by the child in making judgments differ only in degree from those of the mature philosopher. Child and man struggle after finalities and the aim of both is to substitute stability for flux, and psychic rest for a feeling of unrestrained change. All the examples furnish some proof that the child has a conception of substance, quantity, quality, activity, passivity, and place relations.

¹ H. W. Brown: *Thoughts and Reasonings of Children*. PEDAGOGICAL SEMINARY, II, p. 358. "Child Observations at the Worcester Normal School."

These were all categories of Aristotle. Moreover there is abundant evidence in the records, of the use of discursive reason and also of the principle of intuitive reason, to which philosophers fall back for the certainty of that which is undemonstrable. It may be granted that the child uses no formal syllogism; that he is unacquainted with the method of apagogic inference; that he is ignorant of the basis of the dilemma, and never heard of the process of Fermat; yet he has rough categories; he knows a little about cause and effect; he has something of the series idea, as Phillips has shown;¹ and he has a keen eye for resemblances. This is sufficiently apparent in the records, which also show the results (1) of inference without noting premises; (2) of inference from simple consequence (the illative method of Descartes); and (3) inference from analogy. If children repeat the history of the race, it must be to profit as the race has profited by reducing some of the results of experience to form. If the process be not reasoning, then the race has not reasoned; if the end of it be not philosophy, the word has lost its generic force and become a toy for the dialectician and the dreamer.

II. EMPIRICAL PROOF.

1. *By Touching.*

1. F., 1 year 6 months. Given a toy cat. Felt it. Went at once to the family cat and felt its fur as though comparing the two. 2. M., 3 years 6 months. Stung by a bee. Said "Fly burned me with foot." Told that fly had no fire on foot, replied, "Put your finger on one and see if it ain't hot." 3. F., 4. Told not to touch hot stove, put finger on it and drew back saying, "burn." 4. F., 4. Looked for some time at dog lying in the yard. Stooped. Felt of his paws. Left him, saying, "Cause they're rubber." 5. M., 5. If you don't believe my hands are cold, feel and see. 6. M., 5. Asked if a piece of ice were glass, touched it, saying, "No it is ice. It is cold." 7. M., 5. Brother had some candy in the form of a marble. He did not believe that it was candy and said, "Let me take it and see." 8. F., 5. Was told not to touch bumble bees. One alighted on a flower. She wished to see whether it would really sting. She never touched another. 9. M., 6. I told him that I had a real animal around my neck, meaning a fur boa. He took hold of it and said, "It ain't an animal, for I can squeeze it and it does not move."

Perhaps touch is the very earliest of the senses to function. It is doubtful, however, if it is used for giving proof so frequently as some of the other senses. It is so instinctive and so subjective that it comes into action almost without thought. As a means for satisfying one's self of the correctness of certain judgments about a thing, it is doubtless an ultimate test.² In

¹ PEDAGOGICAL SEMINARY, Vol. V, pp. 28-32.

² Dresslar: *American Journal of Psychology*, Vol. VI, p. 320.

the returns which form the basis of this study, there are 78 records of proof by touching. The group of three years containing the largest number of records is 4-6 with 48. The maximal year is the fourth with 20.

2. *By Smelling.*

1. M., 2. Had been given oranges. One day saw a small pumpkin. Cried for it. It was given him. He smelled it and threw it away. 2. M., 2 years 6 months. Gave me a bottle. Asked me to remove stopper. I told him it was not nice. His reply was, "Yes, smell." 3. M., 4. Wrapped an orange in a paper. Gave to aunt. Asked her to tell what it was. She attempted to smell it. He would not let her, because he thought she could easily tell in that manner. 4. M., 5. Given flowers. Was asked if they were real. Replied, "I think they are." Smelled them. Said, "I know they are, for they have a flowery smell." 5. F. H. Got a ring in a prize bag. Aunt called it pretty. Child said, "It is only brass. Smell of it." 6. M., 8. Came from school with a bottle of black liquid. Was asked where he got that ink. Said, "It is licorice water. Smell and see." 7. M., 10. Would say that a coat, glove, or cane belonged to a certain person and give proof by smelling of it. The same was true of S at 4 and 5. His likes and dislikes were often based on the sense of smell.

Fifty-six cases of proof by sense of smell have been examined. The maximal three years are 4-6, including 31 records. The maximal year is the fifth with twelve. Though commonplace, like nearly all the records of empirical proof, these are not without meaning.

3. *By Hearing.*

1. F., 3. Was told that blackbirds would come and take her if she was bad. At every noise afterward, would say, "Don't you hear the blackbirds coming? Listen." 2. M., 4. Brother shouted up from bottom of deep well that he could hear the roosters crowing in China. Child listened for a long time, believing it true. 3. M., 5. Had picked up a kitten. Was told that it was a dog. Replied, "No, it's a kitty. She sings rr-rr." 4. M., 6. I have a new harmonica. Hear it? I have some new boots. Hear them squeak? He always shows what each new thing will do. 5. F., 9. Had a cocoon. Said, "Listen, there is something in this." Then she shook the cocoon.

Proof by hearing is perhaps employed least frequently of the sense methods. Possibly it is less critically observed than the others. The total number of cases is 53. The maximal group, 4-6, has 38 of these; the fifth year, 20.

4. *By Tasting.*

1. M., 2 years 6 months. Saw a bottle of Jamaica ginger on table. Asked if it was tea. Mother told him that it was not and that it would burn him. He took a big swallow to be sure that it was not tea. 2. M., 3 and 5. Found some potash on a beam in the woodshed. "It is candy," said R. Both tasted and burned their lips badly. 3. F., 4. Told that too much of the jelly cake which she was eating would make her sick. Said, "Just taste, mamma, and see if it ain't good on the out-

side." 4. F., 5. Wanted some catsup. Was told that it would burn her tongue. Answered, "Let me taste and see if it will." 5. F., 5. Gave me an apple. Said it was sweet. I did not believe it. She told me to taste and find out if I thought she was not telling the truth.

"Taste-and-see" occurs more often than either "hear," "smell," or "feel," and naturally, perhaps, from the instinct to live. In the matters under dispute in the 125 records of this class, tasting outranks every other kind of evidence. It is the final step. The third year has 20 records; the fourth, 24; the fifth, 27.

5. *By Experimenting, Showing, and Testing by the Muscular Sense.*

1. M., 3. Given a glass mug. Told not to drop it because it would break. Immediately threw it upon the floor to find out. 2. M., 3. "Give me a cent." "I have n't one." "Let me look in your pocket-book." 3. M., 4. Wished to put a weight on a board. Was told that the board would not support it. Immediately tested the board with his own weight. 4. F., 4. They were playing together. A passer remarked that they looked like twins. One said, "I ain't twins. See I ain't." The other remarked, "That man is a liar." 5. F., 4. "Polly will bite." "O no," replied the lady addressed. "Touch her then," said the child. 6. F., 5. Had a toy balloon. Mother told her if it came near anything sharp, it would burst. As soon as the child was alone, she stuck a pin into it to see. 7. M., 6. Was asked what he supposed was inside the head of my China doll. Immediately began to pound its head in order to learn. 8. F., 5. "Ain't I a pretty girl, Ada?" "Come to the looking-glass and see." 9. M., 7. Charged with running over freshly seeded lawn. Father was about to whip him. Protested his innocence. Finally said, "Papa, put my shoes into the tracks and see if they fit." 10. F., 7. Found digging a deep hole in the garden. Asked why, replied that her teacher said China was right underneath us, on the other side of the world and she wanted to see the smoke. 11. M. 8. Had stain on lips. Tobacco was suggested. Boy dropped his head. Put hand into his pocket. Drew out a paper box. Turned his back on boys. Opened box cautiously to arouse curiosity. Said, "Grasshoppers in there." The box contained black licorice. Put a piece into his mouth. Smiled and went on. He gave complete proof almost without a word. 21. M., 11. Told to be careful of some knives with celluloid handles, as they would burn. Soon after one was found with a burned handle. Boy had tried to see if knife handles could be inflammable.

This class has 135 records. The maximal group is 3-5. 59 records are included in it. The fourth year has the largest number of records, 22. The effect of suggestion on child curiosity is very well illustrated in this group. Records like 1, 6, 7, and 12, point strongly against negative teaching. Every step by exclusion balances the prohibited thing against the world and brings it into the very focus of attention. If it is a thing that appeals to the motor impulses of the one who receives the injunction, unless an age when inhibition is fairly easy has been attained, it is quite likely to be done at the first

opportunity, as the result of a process almost as certain as the logic of necessity.

III. AUTHORITY AND TESTIMONY.

1. *Echoing or Quoting Others.*

1. F., 3. Liked to play on Sunday. One day after church, she put her doll away saying, "The minister says Jesus is sorry when we play Sunday, and I am not going to play any more." 2. M., 4. Afraid of the dark. Said there were bears in the dark always, for Charlie said so. 3. M., 4. Was asked shape of earth. Replied, "Some folks say it is round;" but his tone and manner showed that he did not believe it. 4. M., 4. There's a ghost in Mr. R's house. I heard him say so. 5. F., 4 years 6 months. Her mother doubted her statement. She said, "Mamma, R says so, and A says his teacher says it is true. I don't care if it is not. What good will it do me?" 6. F., 4. Was naughty. Mother told her she must ask God to forgive her. Answered, "Why, I did, and God said, 'Great Scot, Elsie, lots of little girls in Portland say heaps worse things than you.'" 7. F., 5. Wanted her doll baptized. Was told she could not have it done. "The priest said I might," was the reply. 8. F., 6. "Women have one more rib than men. Folks say so. They told me that God took a rib out of Adam to make one for Eve, and all men have one less now." 9. M., 6. A. "Your cat will die some day. Cats don't live long," E. "My cat will go to heaven when it dies, because it is a good cat." A. "Cats don't go to heaven." Long and heated debate. E. (finally) "Cats do go to heaven, for my mother said everything with eyes goes to heaven or to the bad place." 10. Boys and Girls about 7. A girl. "The world is coming to an end pretty soon." Boys. "No it ain't. The preacher said Sunday that nobody knows when it will come to an end." The Children were on the playground. 11. M., 7. "Sadie, papa belongs to the devil." "What makes you say that?" "Mamma says that if anybody swears they belong to the devil." 12. F., 11. I said that the verb "is" could have an object. A girl laughed at me. I thought I was right, and I could have sent her home. I said I could show it in the grammar. I got very mad and went out of doors. When I got the grammar, I found that I was wrong.

This division illustrates the method of throwing the burden of proof upon authority. It is the next step beyond belief in the names of things. It represents credulity focussed into forms of expression. The child testifies not to what he personally knows, but to his belief in the truth of what some one has said. The ground of this belief is a habit of believing, which was formed from necessity during the first years of life. The habit strengthened because experience proved that the statements of friends were made with good intent, and were found reliable more frequently than false. There are 299 records of proof by echoing or quoting others. The maximal group of three years is 4-6. In the fourth year are 79 cases; the fifth, 72; and the sixth, 46. "Mother" is cited 104 times; "father," 56; "teacher," 46; "they say" occurs 26 times, and the minister, priest, grandparents, and other family friends are mentioned fewer times. There

is but little quoting of print. Only 17 cases were described. These are about equally divided between the Bible, the newspaper, and the story book. The "book of health," the arithmetic, and the grammar are also mentioned.

2. *Calling Witnesses.*

1. M., 3. A sunflower is black in the middle and white all round, and goes to sleep at night. Doesn't it mamma? 2. F., 3. "Papa said I might go to ride with him." Her mamma did not believe her. The child at once brought her father for a witness. 3. M., 4. Described a performing bear. Listeners laughed. He turned to his uncle and said with strong feeling, "You tell them, uncle Frank, and then they will believe it." 4. M., 5. Went to walk in the field with his father. On his return, tried to tell what he had seen. Kept saying after his statements, "It was so, wasn't it papa?" 5. F., 6. My brother told me that the cat would get my tongue if I sang before breakfast. I always stopped and asked mamma if the cat really would get it. 5. M., 6. Accused of lying. Stood erect with clenched hands and said, "Ask Charlie, then." 7. F., 7. Had been in a fight. Was telling about it to her mother. After every detail, turned to a little playmate saying, "Did n't she Grace?" "Wasn't it so?"

Dogmatic statements are not altogether a new thing in the world. When a child on trial uses them, they are not likely to present anything very novel. For this reason, examples from the 387 records of this group will not be multiplied. The third year has 24; the fourth, 55; the fifth, 79; the sixth, 54; the seventh, 49; the eighth, 32; above the eighth are 94. Playmates are called to testify 116 times; mother is called, 92; sister, 36; father, 29. Whatever the starting point from which proof by reference to authority and by direct testimony develops; whether it is the result of the example of older people, or of a primitive feeling that truth is essential to community life and that all must bear witness to it when there is need, sufficient evidence has been presented to show that testimony is one of the earliest methods employed by children in establishing the ground of certainty. They appreciate the value of disinterestedness and the strength that lies in numbers.

IV. SACRIFICE AND SELF-IMMOLATION.

1. *Wagering.*

1. F., 4. Mother kept her in the house after a rain, fearing that she might run into the water. Explained reason. Child said she would not go into the water. Mother still feared. Child said, "Mamma, you may break my doll if I go into the water." 2. M., 4. Mother questioned a statement. Boy replied, "If it is not true I'll give you my whip." 3. M., 5. I can ride your bicycle. Just let me try. If I can't, I will give you my engine and cars. 4. F., 6. Brother told her there was no Santa Claus. She answered, "There is one, and I will give you all the money in my bank if he does not bring me something." 5. M., 6. Wanted to play near the brook. Mother feared he might fall in. Told her that if he went near the brook, she might

kill his dog. 6. M., 7. I will bet my stars (school rewards) that I can throw higher than you can. 7. F., 8. Promised to go chest-nutting. Children did not believe he was in earnest. He said, "If I don't go, you may have my dog to keep for ever and ever." 8. M., 7. Had the habitual phrase, "I'll bet ten dollars." I told him that it was wrong to bet. Soon after I heard him saying to his brother, "I'll bet you ten dollars that it is wicked to bet."

The records of wagering mark a stage of positive advance toward psychic independence. While doubts were yet answered by testimony, the child learned that people often speak in jest, and that the moral attitude of a person at the moment of speaking is of great importance in judging the truth of statements. He learned also that there are some things in view of which people are always sincere. These perceptions are tacitly formulated into the germ of an oath. A child is willing to bind himself by any obligation that he would require from another. Having bound himself, he talks seriously, unless he adds the mutually understood negative "like fun."

The feeling that sacrifice is a test of sincerity buds early. Children shrink intuitively from the thought of pain and privation. Whenever they are willing to suffer either for an opinion of a doubtful matter, according to the traditions of childhood, it is conclusive proof that they are sincere and know what they are saying. As the records show, the first form of sacrifice consists in offering some valued personal possession as a forfeit or wager to go to the other party, should the statement on account of which it was offered, be proved false. It is not the gambling instinct, although children love chance. There is strong evidence that, in cases like those studied in this section, probabilities are never counted, and that the naming of a possible forfeit indicates a feeling on the part of the child of the absolute certainty of his position. In no case of experimentation has the writer been able to induce a child to offer to "give" anything where conditions were unfavorable to him.

The returns yielded 364 cases of wagering. The maximum three years, 5-7, 173. The sixth year leads with 67. 28 per cent. of the whole number are imitations of stock betting phrases of adults. The younger children say "I'll give you," or "I'll let you have," whatever is to be the pledge. The older ones say, "I'll bet." Of the habitual expressions, some mentioned money in sums impossible to children. Some made wagers of life by shooting or drowning. One girl offered to give her baby brother (dearly loved) to vindicate her word. There were 15 election bets.

Toys and playthings were frequently offered. Dolls lead with 15 per cent. Knives and wagons have 8 per cent. each. Other things that were often named were: bicycles, tricycles, velocipedes, engines, skates, slings, sleds, bean-shooters, doll-car-

riages, doll-cradles, tops, marbles, baseballs, rocking-horses, and whips, "new dolls that can move their eyes," drums, soldiers and Christmas games.

Next in frequency are the pets. The children offer to give their ponies, cats, kittens, hens, dogs, lambs and rabbits. Sometimes the pet is given to be killed. Sometimes other children are to have it. A little Scotch lassie used to say, "Mither, I'll gie ma wee doggie awa' if it isna true."

After pets come hats, caps, coats, boots, shoes, and shirts. Things of æsthetic and practical value are given. With one, it is his "bright, new gold dollar;" with another, a treasured eagle (\$10). Some offer their picture books, Bibles, colored pencils, gold bracelets, new necklaces and breastpins. A boy ventures his Sunday suit; another his first derby hat. Girls offer to give their new dresses, "red waists," gayest-colored hats, and gloves. These are all named seriously when a dispute is pending and, in case of erroneous judgment, the forfeit of playthings is often made to the victor. It then becomes not merely a pledge for truth, but an emblem of humiliation and inferiority.

Besides the lists of things wagered, as they are named in the foregoing paragraphs, nearly all being things that are of value to children, 135 careful observers have given the results of their observation concerning the esteem of children for what they wager. 4 say that "children wager things to which they are indifferent;" 18, "things to which they attach little value;" 113, "they give things which they highly prize." The degree of certainty and the intensity of interest in the disputed point are determining factors in the question of the value of the forfeit.

2. *Ordeals and Penances.*

In every one of the records that follow, the painful act or struggle is undergone: (1) in proof of a statement of ability to do some physical feat; (2) to accomplish a task under hard conditions; (3) to get accurate sense impressions; (4) to make correct inferences. The themes for doubt are simple matters, like walking, riding, running, skating, promotion at school, preparation of lessons, ability in jumping, shooting, getting base hits, getting around promptly with appointments; the size of fish caught, snakes killed, and animals seen; the best places for obtaining marbles and other playthings; details about accidents; the real facts about men who eat glass; pets, the best places to find nuts, the ownership of childish property, and very many other things of which these are fair types. The facts given are generic; therefore it will be possible to avoid pages of detail in reporting the cases, and to record very little

more than the forms of the ordeals and penances suggested in them.

1. F., 5. If Willie did not slap my face because I would n't let him swing me, I'll kill Tabby and eat her. 2. F., 6. I'll drink water so hot it will burn my tongue. 3. F., 6. I'll swallow my dinner whole. 4. F., 6. Ate a worm with apparent relish, to prove a statement. 5. M., 6. I'll dip my head in kerosene and wash my face in dish water. 6. M., 4. If Frank did not come, I will go up stairs in the dark. 7. M., 8. I'll swallow a snake if there were not three organ grinders at our house this morning. 8. M., 8. I'll eat my shirt without washing. 9. F., 8. If Frank isn't coming, I'll eat two toads. 10. M., 8. I'll eat a stone if I did n't see them. 11. M., 12. If I'm lying I'll kiss your naked body. 12. M., 10. If McKinley ain't elected I'll saw wood. 13. F., 6. If the world don't come to an end in three days you may hit me five times. 14. F., 5. If I killed the rabbit you may tie my tongue to my chin. 15. F., 6. If you prove it I don't care how hard you whip me. 16. M., 6. You may put me down and walk over me if it is not so. 17. M., 8. If I am wrong you may lick me in any way you like. 18. Adult. As a child often went into a room alone, pinched and slapped herself and pulled her own hair for an error. 19. M., 9. If he did not come I'll stay away from the ball game this afternoon. 20. M., 4. If I'm late you may give me a lunch to Nero. 21. F., 5. If I don't keep my promise I won't eat any plum pudding for dinner. 22. M., 6. I'll go without strawberries for supper. 23. M., 7. If I don't have every word I'll shut myself into a room all day Saturday. 24. F., 8. You may keep me in at recess every day for a year. 25. F., 6. You may give me bread and water every day for a week if it is n't so. 26. F., 6. I'll bite my fingers until they bleed. 27. M., 8. I'll lay down and pound my head until my teeth drop out. 28. M., I'll go to grass and eat clover.

Others mentioned eating plants, toadstools, crickets, flies, rats, crows, glass, lamp chimneys, ten-penny nails, live frogs; swallowing buttons, marbles, rings; chewing rags, hats, shoestrings, insects, tacks, and wires; drinking vinegar, kerosene, castor oil, and hot water.

There are records of actual fasting for a day. In such cases, preparation is made for the fast by eating as much as possible on the day before it is to begin. Going to bed early, sitting up, or staying out all night, hiding in a closet, crawling into a hole, hiding head in the sand, going down a dark street alone at night, running around a block, climbing stairs 200 times, sitting in a chair for hours without speaking, sitting under the trees all day, are often mentioned.

There is also a giving over of dolls, balls, rings, and other playthings and valuables in the case of false statements.

Various pleasures are given up. The children described stay away from picnics, drives, boating, swimming parties, games and amusements of many kinds.

Soaking the head in a barrel of water, actually jumping into a pond or river, sitting on a tack, sticking pins into the flesh, giving others permission to call mean names, and declaring willingness to "be anything," which means about the same as being called names, are not uncommon.

Of the ordeals of children 290 records have been classified. The number in the maximal three years is respectively, sixth, 38; seventh, 59; eighth, 65. 35 per cent. are ordeals of eating and drinking; 10 per cent., of fasting or giving up things

especially liked ; 10 per cent., of solitude, inhibited activity, and sleeplessness ; 9 per cent., of giving up particular pleasures ; 15 per cent., of motor effort ; and 21 per cent., of physical pain and mutilation.

There is no doubt about the spreading of these curious practices through the imitation of one child by another, but how do they come into existence? Is there anything in the practices of adults from which they could be derived by direct imitation? Does the organized life of the school offer material for them or merely awaken an impulse to invent them? Probably some of them are caught from hints dropped by older people in their conversations about the olden time. Fairy stories and elf lore are at the root of others. "Eating clover" is perhaps, an application of the old superstition that the stomach of any one who ate it would turn over five times.¹ Sitting without speaking, forfeiting recess, giving up pleasure excursions, and eating bread and water, like 23, 24, 25, and some of the more condensed forms which follow, seem like adaptations of forms of correction employed in the school and in the home ; but, with the exception of the "fool's cap" and the "dunce's block," one looks vainly for traces of these in the old school ordeals like standing before the school with outstretched arms, holding a stick of wood at arm's length, sitting on the floor with feet elevated, bending over to hold the finger on a nail, raising the eyes and holding the chin to a line on the wall, driving a wedge between the teeth, propping the mouth wide open, and putting a ball or a kind of spring trap into the mouth, some of which have not entirely passed away. After all the sources which help to explain the origin of these ordeals have been examined, many of the forms receive no illumination, and it seems as though they must be spontaneous in the child. Is there not an expression of something instinctive in the large per cent. of penalties aimed at the nutritive system? It seems as though there is a dim consciousness among children that nutrition is the first law of life, and that while answering the demands of the stomach normally may be pleasant, if the process cause gagging, retching, or any other disagreeable sensation, it may become disgusting ; therefore, when one is willing to submit to tests like 3, 4, 7, 8, 9, 28, and those which follow, it is strong proof that he is both honest and sincerely in earnest. Yet there are reasons why the eating of crickets, worms, and plants, may be one of the milder tests to children, provided that the thing eaten be not unpleasantly sour, bitter, or alkaline. The cause of the fear in all these forms of eating is the physiological suffering which is expected to follow ; but to cause nausea and

¹Vernaleken : In the Land of Marvels, p. 105.

vomiting, reflex antiperistaltic action is necessary, and this is due more to the thoughts suggested by sight and smell than to taste itself. But these elements are not analyzed by children; therefore they may not suffer so intensely in such acts as adults would.

If it is true that many of these ordeals and penances spring up spontaneously, there must be a parallel for them in the steps taken by the race to gain control over environment. The best field for tracing such a parallel is that of law and ethics. Even a brief investigation shows a strong resemblance between the efforts of children and those of men to advance toward something definite and final. Differences also appear. Among the most striking of these, one must note the fact that in the practices of children, as they are judged from these records, there is no indication whatever of recourse to chance or divination, which marks primitive methods of securing justice among men. Burmese litigants once sat at an altar and rested their case on the burning of candles.¹ He won whose candle lasted longest. The ordeal of the lot was similar. The Bornese poured lime-juice on two shellfish.² The first contraction meant defeat for the party represented by the more sensitive mollusk. Natives of Assam formerly exposed one charged with a crime. If after two or three days in the jungle, no tiger had come to devour him he was adjudged innocent.³ Some African tribes make one whose veracity and innocence are in doubt swim a creek in which sacred "Haie" are feeding.⁴ At Myra in Lycia, the man from whose hand a sacred fish refused to take food, was esteemed guilty of whatever charge had been made against him. On the Gold Coast a needle is thrust through the tongue of those suspected of theft.⁵ If it fails to penetrate, the suspect is in league with evil spirits and he is punished. Other tribes decide the fate of supposed malefactors by lines drawn on the skull of a chimpanzee.⁶ White lines bring freedom; black, condemn. Still other tribes have ordeals which owe their force to suggestion, in a higher degree than those already named. In one locality a defendant is compelled to offer his hand to the bite of a deadly snake. The fangs of the snake are secretly removed. A priest takes it in charge. If the victim is not bitten, he is innocent; so also if sickness does not follow a bite.⁷

¹ Lond. Jour. Folk Lore: 1884, p. 89.

² Ency. Britanica: Ordeals.

³ Ford: Liv. Age, Vol. LIII, p. 255.

⁴ Post: Afrikanische Jurisprudenz, p. 125.

⁵ Ellis: Tshi-Speaking Peoples of the Gold Coast, p. 201.

⁶ Lea: Superstition and Force, p. 222.

⁷ Post: Op. Cit., p. 124.

So far the practices named have been those of peoples far removed from the centers of English and American law and culture. But even in those centers through the Middle Ages and down almost to the present century, people were juggling with the "Bible and key,"¹ the "sieve and shears,"² weighing naked witches against the Bible, a process called the "ordeal of the balance,"³ and expecting the wounds of murdered men to bleed again in the presence of the murderer,⁴ with the same credulity and superstitious awe that kept Arabian miscreants from bathing in the Dusares,⁵ perjurers of Tyana from drinking the waters of the Asbamaean lake,⁶ and the dweller in the Syrian desert from swearing falsely on the river of death. The feeling does not differ in kind from that which made the African fear dropsy and madness after drinking water in which a charm had been soaked,⁷ the Indian expect sickness if he testified falsely after drinking the ashes of an oath-parchment,⁸ and the Israelite, a reddened beard from drinking the waters of the ashes of the golden calf.⁹ This whole spirit is foreign to the ordeals of childhood. They are matter of fact and true to the realism of the early years of life.

Another striking fact is that the child has nothing that resembles the ordeal of fire. But this has been widely used by men. In India, this test with its accompanying baths, applications of the peepul, jend leaves, and dharba grass for the hands; its bandages of silk; its invocation to the fire god to reveal the truth on the flesh, and the final grasping of the iron, so hot that when carried seven steps and dropped in the center of the innermost of seven concentric circles, it would still burn the grass, was one of the sternest for moderate offences. According to the Sacred Laws,¹⁰ for certain crimes of violence, the outlaw must smear himself with clarified butter and embrace an iron image heated red hot. The Bedouin licks hot iron. The tribes of Africa also use the fire ordeal. In the days of Athelstan proof of innocence was complete when one carried three pounds of hot iron the legally prescribed distance without being burned, and later, both in England and in Germany, one must walk blindfolded and barefoot over plowshares placed unequal dis-

¹ Chambers Journal: Vol. LXIII, p. 363.

² Tyler: Prim. Cult., Vol. I, p. 128.

³ Dyer: Church Lore Gleanings.

⁴ Brand: Popular Antiquities, Vol. III, p. 229.

⁵ Smith: Religion of the Semites, p. 164.

⁶ Smith: Op. Cit.

⁷ Ellis: Op. Cit., p. 197.

⁸ Vincent: In the Land of the White Elephant, p. 11.

⁹ Exodus XXXII, 20.

¹⁰ Müller: Books of the East, Vol. II, p. 104.

tances apart.¹ If, in addition to these illustrations, it be recalled that Sophocles and Tacitus do not forget this form of the "*judicium dei*;" that Daniel writes of the fiery furnace; that the works of classic authors of every age contain many references to trials by fire; and that people still talk of going "through fire and water" to attain a purpose, the great influence of the fire idea on the psychic life of the world becomes more apparent, and the fact that children do not give it any expression grows into a matter for wonderment.

The ordeals of children generally seem to partake more of the nature of an honest wager of battle than of tortures from which only supernatural intervention could save them. In their disputing face to face with appropriate action and changing stress, one can easily see a miniature of the dramatic movement, the stereotyped challenge and answer, and the awful earnestness with which men once stepped into the adjacent squares before sober judges to vindicate their claims in combat.² The early records of Bohemia, Servia, Poland, Pomerania, Moravia, Russia, and Silesia, show that this custom was widely diffused before Celt or Teuton took it up or Charlemagne had pronounced it "superior to faithless oaths."³ The 37 stories about the "wager of battle," told by Saxo Grammaticus,⁴ show how common it was in Danish law.

When a boy carries home a victorious playmate on his back, or permits himself to be called names after having received proof of a personal error, his attitude is an acknowledgment of a subjection as complete as that of the military ordeal of passing under crossed spears, or submitting to the "ordeal of sods."⁵ "Running around the block" recalls a clause in old English law; viz.: "Any one whistling after daylight is closed, shall walk thrice around the house" by way of penance.⁶ This was merely a municipal statute, and as such, it suggests the curfew now rung in so many cities at nine o'clock to take children from the streets.

The records of eating and drinking described on page 324, have a counterpart in the eating of "bread and salt" common among wandering tribes; of "bread and cheese," known from Alexandria to England; of dry rice, once widely practiced East and West; of a paper bolus previously cursed and supposed to bring perpetual unrest to the guilty;⁷ of the

¹ Blackstone: Commentaries, Vol. IV, p. 368.

² Blackstone: Vol. IV, p. 347.

³ Lea: Superstition and Force, p. 108.

⁴ Elton and Powell's Ed., XXXVIII.

⁵ Du Chaillu: The Viking Age, Vol. I, p. 558.

⁶ Grose: The Provincial Glossary.

⁷ Chambers Journal, LXIII, p. 363.

sacrament, terrible to the giver of uncertain evidence from the imprecation, "May this morsel be my last if I lie;" and, finally, of anything given by another, or partaken of while sitting with others at a common table. The last named custom was a survival in changed form of the killing of an animal, or the drinking of blood. It made a bond of unity.¹ The Arab regarded it an inviolable compact of brotherhood, and the thought, "there is salt between us," took away all suspicion against a fellow man.²

Of a different type from the ordeals of drinking noted on page 324, were the ordeals of poison. "What will you drink on your statement?" was a fearful question. In India, Siam,³ and Loango,⁴ a person on trial fasted for twelve hours, ate a quantity of dry rice, then drank the "red water," an emetic poison. The tanghena cherry,⁵ stramonium, euphorbia, aconite, arsenic, and sulphuric acid are some of the many substances that have been used in this manner.⁶

In Western Africa the "magical leaves" and their curse, decided questions of domestic infidelity, and the Hebrew wife drank of the "water of jealousy."⁷ Sometimes, instead of this, the suspected one must plunge the arm into melted lead, or boiling oil, or water, to remove a ring or a pebble from the bottom of the vessel containing it. An uninjured arm was a proof of innocence. In the song of Gudrun,⁸ this test is described. After an oath on the "white holy stone" she came to the cauldron and

"Dipped to the bottom her white hand
And took up the costly stones"

saying:

"Look now, men; I am guiltless,
According to the holy custom.
See how the cauldron boils."

Then her accuser, the lying Herkja, is made to submit to the same ordeal and

"The man saw not a pitiful sight
Who beheld not how the hands of Herkja
Were scalded there."

This practice is not accidental. It has a record of long use

¹ Gen. XXVIII, 30; XXXI, 54. Also, *Remaines of Judaisme and Gentilisme*, Aubrey. (Edited by Britten.)

² Smith: *Religion of the Semites*, p. 252.

³ Lea: *Op. Cit.*, p. 222.

⁴ Post: *Op. Cit.*, p. 126.

⁵ Lea: *Op. Cit.*, p. 224, quoting from Ellis's *Polynesian Researches*.

⁶ Oswald: *The Open Court*, Vol. XI, p. 150.

⁷ Numbers V, 17-28.

⁸ Du Chaillu: *The Viking Age*, p. 561.

in Bithynia, England, Germany, Russia, Sardinia, Scandinavia, and among many African tribes.

Record 2, page 324, has a parallel in India where the Brahmin who persistently drinks the liquor of rice must drink one bumper boiling hot.¹

Ten per cent. of the records (see page 324) are ordeals of fasting. They cannot fail to suggest the great importance that has always been attached to seasons of fasting in the initiatory rites of savage tribes, in the life of the church, and in the history of the growth of religion. They recall the Lenten season, the Pentecostal vigils, the Ninevite fast, that of the Nativity, the old time Fast-day of the Puritans, the long fasts of Christ,² David,³ Elijah,⁴ and Moses,⁵ and many other days of abstinence and self-denial. They renew the memories of the Sacred Law which tells how the king deals with the evil minded, and how Yama punishes those who offend secretly.

The children have penances of solitude, wakefulness, and sitting still. Every one can be duplicated in the Books of the East.⁶ Children offer a sacrifice of toys for their errors; the Buddhist gave pieces of sacred fuel or oblations of himself. Children jump into the water to give assurance of seriousness; the primitive Aryan believed it a pure element which could not receive anything unclean. The feeling that perjurers, witches, and all who were allied with spirits of evil would float if cast into the water, took a deep root and during many generations it was a common thing to see wretches bound hand to foot and thrown into some pool or stream to be declared blameless only in the event of sinking.

Records like 14, 15, 16, 18, 26, and 27 (page 324) are numerous. Is there not here a miniature of the days of torture, flagellation, monkish self-abnegation, horse hair shirts, iron belts, chain mail, and sackcloth and ashes? Do they not remind one of the victim who once laughed in the ecstasy of religious frenzy while being voluntarily trampled into the dust? of sacrifice of teeth, noses, ears, and jaws, among various savage tribes? of the parting with fingers and toes among the Dakotas, Mandans, Fijians,⁷ and the sons of Judah⁸ to denote submission? Is there not in the offer of a child to sacrifice a hand or a foot something related to the practice of severing the hands of thieves in Egypt and Japan? Whatever the spring from which all these customs of children flow, they are strikingly

¹ Müller: Sacred Law, Vol. II, p. 105.

² Mat. IV., 2. ³ 2 Sam. XII, 16. ⁴ 1 Kings XIX, 8. ⁵ Ex. XXIV.

⁶ Müller: Books of the East; Sacred Law. See pp. 107, 112, 297, and 321.

⁷ Spencer: Prins. Sociology, Vol. II, pp. 56, 657.

⁸ Judges I, 6-7.

analogous to those of the race. If any one should choose to ascribe them to humor, the search for novelty, or pure imitation, he will do well to remember that the most serious and lofty standards of civilized life are an evolution by steps like these, and that there must have been at some time, a beginning point in instinct.

V. ASSEVERATION.

1. E., 6. Used to say "Honest, truly, black and blue; lay me down and cut me in two. All's square now, ain't it?" 2. F., 7. Used to say "Honest and truly," "as sure as I stand on this spot," or "as sure as I stand here." Girls always believed her when she said these. 3. F., -. Was afraid of the expression "hope to die." Used it one day. Felt that a calamity was imminent for a long time after. 4. F., -. Used to say "hope to die," but never except when lying, and always feared death after saying it. 5. F., 6. Used to say, "It's as sure as the sun rises." 6. F., 6. It is as sure as preaching; I would say it if I were to die next minute. 7. F., 8-13. Used to say, "Honor bright," "Honest and true," "Sure as my name is F," "sure as Fate," and "I would say it to the Queen of England." 8. M., 14. In our school (6 grades) we sometimes say "honest," or "honest and true." If that is not enough, "Honest and true, black and blue; Lay me down and cut me in two." We sometimes say "Cross my heart," and sometimes make a cross on our throats with the forefinger. 9. F., Adult. All the children I ever knew, felt afraid to say "I hope to die." Once in our school the children held a meeting and voted never to say it from fear of consequences. 10. M., 15. You can nearly always believe anybody when he says these (asseverations), but once in a while you find a tough that don't care what he says.

Other phrases used for the same purpose are: really and truly, I truly know it, sure, surely, as sure as Columbus discovered America, I would say it with my latest breath, I would say it to my mother, my father, the president, the governor; I would say it if I were to be turned into a wolf, if the earth were to open and swallow me, if God strikes me dead when I get down to pray, if the house were to fall on me, if the sun never sets again, if water were to run up hill, if the world goes up, if you were to cut my head off; I would say it to the angels, I would say it in church, if you struck me stone dead, deaf and dumb and blind; if I were to choke, hang, be sick; may I never stir again, may I be burned, paralyzed, damned this minute.

Some are similes drawn from facts or traditions of the faith: It's as sure as God made Adam, the world, green apples; as sure as there is a God in heaven; as true as heaven; as I hope to live in Paradise. Others are simple affirmations or dogmatic statements: It is all wool, straight goods, honest, candid truth, honest fact, as true as anything; as true as true can be; honest, true, red, white, and blue.

A few show that the speaker is conscious of staking his reputation: I pledge my word of honor on it; it is so or I'm a sinner; if it is so I am a liar. Others recognize the power of disinterestedness: You need not believe me unless you wish; I don't ask you to believe it but it is so; it is true whether you believe it or not; what good will it ever do me anyway? I would say just the same if you were not here.

The following are based on a likeness to some accepted fact of science or history: As true as that the earth is round; record 5, as sure as that two and two make four; as sure as that Moses was born, or that I

have a heart. Some rest on a fact apparent at the moment of speaking: Record 2, as sure as you stand there, as I have ten fingers and ten toes, as I look into your eyes, as that I have had my dinner, as that I know I live, as there are stars, as water is wet, the stove is black, vinegar is sour; as that I can carry the coal hod full; as "shore as I'm pore."

These contain an idea of sameness and difference: As sure as eggs are not potatoes; as that molasses is molasses, vinegar is vinegar, black is black, gold is gold; as that your name is not Jack Robinson; as that Sunday does not come in the middle of the week.

The 3,310 cases in this section may be roughly grouped and summarized as follows:

1. Forms of Dogmatic Affirmation, 264; (a) "It is so," etc., 248; (b) "I know it," 16.
2. Forms containing a Plea, Protest, or Reiteration, 1,238; (a) "Honest, true," etc., 565; (b) "Truly, honestly, surely," etc., 288; (c) "Honest and true, black and blue," and variations of the rhyme, 385.
3. Forms resting on General Belief, 204; (a) "As true as preaching," 110; (b) As true as God, the Gospel, the Bible, 94.
4. Forms depending on Filial Love and Reverence for their Seriousness, like "I'd say it to my father, mother, the minister, the priest," 83.
5. Forms based on something Apparent at the moment of Speaking, 822; (a) "As sure as you live, I live, you are born, I am born," etc., 594; (b) "As sure as I stand or sit here," etc., 228.
6. Forms based on respect for High Station, as "I would say it to the king, queen, governor, president; or to Washington, Columbus, Adam, and Moses," 94.
7. Forms Indicating a Readiness to face Death, like "I hope to die," "be struck dead," etc., 350.
8. Miscellaneous, 255.

In these eight groups, the period of three years which furnished the greatest number of records, is respectively: 1, 6-8; 2, 6-8; 3, 6-8; 4, 7-9; 5, 7-9; 6, 8-10; 7, 6-8; 8, not averaged. The year in each group that gives the maximum number is: 1, 2, 3, the seventh; 4, 5, 7, the eighth; 6, the tenth.

Throughout the study much more is suggested than can be expressed in so brief a discussion. The figures adduced are offered as illustrative, merely, and readers are expected to estimate them for what they will yield to each as an individual.

VI. CEREMONIES.

1. *Crossing the Heart, Throat, Tongue, and Fingers.*

1. F., 6. "I am going to speak at the entertainment." "O you're not." "I am. See?" She was crossing her throat.
2. F., 5.

Promised to keep a secret. Crossed her fingers on the Bible. 3. F., 7. Breathed across fingers and then made a cross over heart. 4. F., 8. When I told my playmates anything and said, "I'll cross my heart," as I began to make the cross, all stood in a circle and raised their eyes toward heaven. 5. F., 10. My friends make crosses over their hearts. I cross my lips. I feel then as though my lips are sealed. 7. F., Adult. As a child I used to think that if I said, cross my heart and then told what was false, a man would come and cut my heart where I made the cross. 8. F., 7. I have something awful to tell you if you will cross your tongue not to tell. The child addressed crossed her tongue. 9. F., 8. At this age my friends and I shook hands as a pledge of secrecy; and for truth, we crossed our hearts, throats and breath. We sometimes placed our hands in the attitude of prayer and said, "As I hope to live in Paradise." 10. F., 10. Described a doll. Friends doubted her statement of its size. She said solemnly, "I'll cross my heart and spit over my little finger." 11. F., 8. Crossing the throat was to me a symbol of the true cross. 12. F., 8. With her friends used to kneel on one knee and place both hands on heart. 13. F., Adult. I often hear children saying, "My finger's wet; My finger's dry; Cross my heart, and hope to die." At "wet," the finger is wet in the mouth; at "dry," it is raised in the air. 14. M., Adult. We used to blow across our fingers for truth. Children have changed the form now, for I hear them saying, "Is my finger wet? Is my finger dry? I cross my heart, I will not lie." 15. M., Adult. I have seen persons cross the heart, pull out hairs, and beg to be believed. 16. M., 4. (To tin soldiers.) "Will you promise?" Dip your finger in this blood (red ink) and do this way (making sign of Trinity) and say, 'Three in one.'

17. Children playing in a yard.

John. "Where's my knife, Mary?"

Mary. "Dn'ow."

John. "You know you have taken it."

Mary. "I haven't got your old knife."

John. "Then you have lost it."

Mary. "I have not had your old knife. So there!"

John. "Honor bright?"

Mary. "Honor bright."

John. "Cross your heart?"

Mary. "Cross my heart."

John. "Cross your heart and hope to die?"

Mary. "Cross my heart and hope to die."

John. "Crook your little finger and hope the worms may eat you if you are telling a lie?"

Mary is silent.

John. (Very slowly and impressively.) "Crook your little finger and hope the worms may eat you if you are telling a lie?"

Mary left the company. She seemed very angry. Presently she returned, threw the knife at her brother and started away. The children called after, "Oh! you said honor bright, and cross my heart." They did not play with her again for a week.

18. M., Adult. It seems that there are positive and negative phrases that go with the crossing ceremonies. To cross "honest and true," is always serious. To do it "like fun," or "over the left," takes away the danger that is supposed to follow inexact statement. 19. Other acts described are: crooking the finger and hoping it may never come straight, holding the thumbs vertically, making a cross with the fingers and kissing them, and reciting jingles like, "May all my teeth drop out if I tell what this's about," and "I will never, never tell; if I do, I'll go to hell."

The ceremonies involving crossing contain two distinct ideas : (a) an imitation of the cross, which all have been taught to regard sacred ; (b) an act symbolical of decapitation. It is easy to see how strong an appeal either idea must make to the natural mysticism of childhood. Records 4, 5, 6, 9, and 17 show something of the depth of the feeling out of which all these forms of expression flow. Perhaps, like all things which are deep and vital, it falls without the possibilities of verbal description. Of the two classes named above, the former with its stories of suffering and sacrifice, its lessons of gentleness, its depths of love, its interest in the happiness and greatness of childhood, and withal, its vagueness because it is so unlike anything in a child's experience, sets fancy free and awakens in the young minds to which it comes, a flood of tenderness which is ever the most imperative of the forces, reacting in the direction of truth. The second class has a root exactly opposite in its nature. It springs out of the instinct that dreads the bogie, butz, elf, ghost, Nyck, and makes the flesh creep at the thought of brigands, pirates, and avenging spirits with their accompaniment of awful weapons, severed heads, and gory bodies. Thus again love and fear are side by side and hand in hand, in furthering the cause of truth.

Record 10 introduces the idea of magic. Spitting as a charm is of great antiquity. In India saliva from the mouth, according to the sacred writings, was always pure, and was much used in lustration. Brand gives many examples of the custom.¹ The Greeks were in the habit of spitting into the bosom whenever they met a madman or an epileptic. In an age much nearer our own, the lustration of children with saliva on the *dies nominalis* was considered as necessary to their welfare as was a favorable position of the heavenly bodies at the natal hour in another age. Pliny notes the efficacy of the practice against witchcraft. Perhaps the custom frequent among players upon the diamond and the gridiron, of spitting on their hands or their gloves after a fumble, has a family tree with longer branches than is usually supposed.

13 gives a form of reasoning without expressing the premises. This will appear more fully in a later section.

Crooking the finger and the elbow may symbolize the idea of squareness. The second of the forms may be merely a serious imitation of what some one has lightly said when asking a candidate to raise his hand in taking an oath.

15 is a solitary case. The offering of hair once had great significance, both as an elf-charm and as a religious ceremony. It was a rite among the Greeks at the entrance to manhood. It

¹ Popular Antiquities, Vol. III, 259-263.

formed a part of the offerings on pilgrimages to Jerusalem. The Australian used to pull hairs from the head of a departed friend. Following the same custom, the Peruvians plucked out eyelashes, and offered them to the sun, the rivers and the hills. The case cited is probably an imitation of an idea borrowed from reading old traditions like these.

2. *Trade Rhymes and Pledges.*

1. F., Adult. When five, and weakening after a trade, if told that her act was "like being an Indian," always held to the bargain.

2. F., 8. With her companions used to say when trading,
"King, king, give a thing
Never take it back again."

3. F., 10. My mates used to sing when making a promise,
"First to the East, then to the West,
Who'll take this promise and keep it the best?"

They used to turn as they sang.

4. F., Adult. To close a trade the children near my home (Salt Lake City) use an odd ceremony.

First Child. "Red leather?"

Second Child. "Trade forever."

This is said with the little fingers interlocked and each child must see that the other does not stick out his tongue. In some parts of Connecticut and Pennsylvania, both parties to the trade say the one word "leather" to ratify a compact.

5. M., 8. Several boys in one school. They trade, then shake hands. After this one asks, "What goes up the chimney?" The other answers, "smoke." Next both say together, "Bargain 's never broke."

6. M., Adult. When I was 10 to 12, a common formula in trading knives was:

"Whole handle, whole blade,
Whole backspring, or no trade."

7. Two variations of the preceding in other States indicate additional precautions. The form,

"Trade, sight unseen?"
"No handle. No gamble.
Whole blade or no trade,"

insured safety in the trade "without seeing." The following:

"Whole handle. No gamble.
Whole blade or no trade.
Sight and seen,"

fixed the fact that the property had been examined.

8. Sometimes there is a reminder that a trade may be disastrous.

"Trade?" "Trade forever."
"Lick lack, never take it back."

The last is said by both parties.

9. Sometimes a "sharper" takes an option.

"I am the key; you are the lock;
I can trade back, but you cannot."

10. A reminder that both parties have used the necessary formulas:

"Trade?" "Trade." "Double trade,
Never trade back again."

11. "What's your shoes made of?" "Leather."

"Then the bargain's done forever."

12. "What's the fox got?" "A bushy tail."

"The bargain then will never fail."

13. "What do you trade it for?" "For the eyetooth of a wolf."
 14. An iron clad formula:
 "As bell shall ring, and candle burn,
 From bargain made, I'll never turn."
 15. A pledge of secrecy when boys are carrying away booty around
 a new house or elsewhere:
 "What is this?" "It's a brick."
 "To your promise always stick."
 16. F., 11. Two girls of this age put all their solemn agreements in
 writing, sign them, and put a drop of blood after their names.
 17. F., Adult. I know two girls of 11 who entered into a "partner-
 ship." They wrote two pledges and sealed them with a vow never to
 open them until after the death of one. The survivor was to burn her
 own pledge and open that of her "partner." They agreed to divide
 their possessions and to stand up for each other. Ten years later they
 opened the pledges together.

202 persons report having used these rhymes and pledges. Only 2, 4, 6, 7, 11, and 15 are general. 13 is common among Russian boys and suggests the court oath of the Ostyak. In many of the forms there is a veiled concept of a category. Take 11, 12, 14, and 15. In plain speech they are equivalent to: You know this fact. It will always endure. The brick will always be a brick. The material of your shoes will be leather as long as shoes are shoes. The tail of the fox will always be bushy. The bell was made to ring; the candle to burn. The conditions of our trade are as clear and as express as these facts; therefore you ought to cling to the compact as a natural law of human relations, until facts like those named shall change their nature.

Record 16 tenses the muscles at the roots of the hair like the solemn oath of Huck Finn and Tom Sawyer of which it is a duplicate. But all through the ages the marvellous power of blood, which seems to be felt by the children named in this record, has been recognized. The importance of the idea and its relation to the family, the State and the church is nicely shown in the works of Smith¹ and Trumbull.²

The only parallel to the foregoing rhymes which the writer could obtain from literature appears in the works of Gregor.³

One form used by Scotch lads is:

"Ring, ring the pottle bell,
 Gin ye break the bargain,
 Ye'll gang t' hell,"

And another:

"Will ye braek the bargain?" "No." "Swear than:"
 "As sure's death;
 Cut my breath."

¹ W. Robertson Smith: Religion of the Semites.

² H. C. Trumbull: The Blood Covenant. The Threshold Covenant.

³ Folk Lore in the Northeast of Scotland, pp. 22-3.

Ten mile aneth the earth,
Fite man, black man
Burn me t' death."

There is a suggestion of the same simplicity in some old forms of bequest published in the papers of the London Folk Lore Society.¹ One is a pedigree grant from Athelstan to the Roddam family :

"And for a certain truth,
I bite this wax with my gang tooth.
So long as muir bears moss and cnout grows hair,
A Roddam, a Roddam forever mair."

Another is a seal upon a grant from William the Conqueror to the "Norman Hunter : "

"To witness that this is such,
I bite the white wax with my tooth
Before, Juggle, Mawd, Margery, and my yongest sonne Henry."

3. *The Oath among Children.*

1. F., 8. When I said, "Hope to die," I raised my hand at the same time. This made it very solemn and impressive. 2. M., 10. Trading marbles with another boy. After trade. "Hold up your right hand." Second boy. "What for?" First boy. "My father says they do it down at court when a feller is talking to keep him from telling a lie." The second boy said "Oh!" and raised his hand. 4. F., 5. Put Bible on the floor and put her foot upon it when doubted by her teacher, saying, "Now, teacher, don't you believe me?" 5. M., 10. Stole tobacco. Denied with the expression, "Hones' to God, I kin swar an' kiss a thousand Bibles." 6. F., 12. I read a speech in my history which began: "In the presence of this vast assembly. I do solemnly declare and affirm." For a long time after I used this on every possible occasion. 7. F., 14. At this age I swore with uplifted hand alone and in a dark room, that I would do certain disagreeable duties that many girls leave to their mothers. 8. F., Adult. When sixteen, I took the oath of a Good Templar. I kept it for years, but broke it in maturer life as I would discard old clothes.

In the natural course of things, the oath does not appeal to early childhood. It comes with the awakening of larger ideas and obligations. For this reason, there are fewer records of its use than appear in the other groups of ceremonial forms. The total number of cases classified in VI, is 1,218. The distribution is :

Crossing throat, heart, lips, and breath, 424 ; Shaking hands, crooking fingers, elbows, and taking a formal oath, 328 ; Trade rhymes and pledges, 202 ; Miscellaneous, like 19, p. 333, 354.

Interest in these symbolic acts, excepting the oath, seems to be most intense from about the seventh to the tenth year. Is this a natural period for the development of symbolism ?

¹ Denham Tracts, Vol. I, 253.

VII. THE FORMAL OATH AMONG MEN.

When we pass from the use of the oath by children to look for its origin in the race, we merely transfer the problem to the childhood of long ago. It has lost none of its difficulties. It has gained little new light. It is still a problem of instinct. The very first man who ever bound himself by an oath, could not analyze his act, for it resulted from the compulsion of feeling. Now, after the lapse of ages, truth makes it necessary to say that we know scarcely more of the nature of the instinct and the act. The meaning of the names of the ceremony—oath, curse, swearing—cannot be accurately traced. If the verb swear, which conveys the idea of a person responding, be derived from the Sanscrit *svar*—voice, or sound—swearing is still only a lifting up of the voice in response to something indefinite. In the haze into which such a quest as this precipitates one, and in which everything seems disproportionate and grotesque, whether it is deemed better to follow the thought of Spencer or that of Tyler, concerning the awakening in men's minds of the concept of a spiritual presence animating all things, it is necessary to recognize a feeling of intimate relationship between primitive man and the unseen *πνεύματα* which seemed to him to fill stick and stone, sun and star, dewdrop and fountain. That some of the objects thus vitalized should come nearer than others to their human companions, was but natural, and every mention of any of these at the time of making a compact, both increased the feeling of their reality and became a confession of the inability of men to separate themselves from their environment. Within it, and inseparable from it, the individual found his only feelings of unity, of homeness and rest. In strange conditions, new manifestations of life brought the idea of stranger spirits, changed identity, and loss of selfhood. According to this view, whether taken by a man independently, or because required in the experimental stages of a social metamorphosis, an oath would be as reverent as a prayer; as lofty as a hymn of praise.

After the stages of magic and ordeal, already noticed in IV, 2, under various names, the formal oath spread widely through the institutions of both Church and State. It binds the presidents of republics and all officers holding positions in the legislative, executive, and judicial departments of the State, to allegiance to the constitution and the laws. It also binds them, as it does the most trivial officers in a municipality, to the faithful performance of their duty. According to a writer in *Chambers Journal*,¹ English officials are just as thoroughly sworn as are our own. They must swear not to talk about the Queen's business, not to be tempted by bribes, and not to give advice to

¹ Vol. XLVI, p. 36.

any one out of the regnant party. The hog reeve swears to take up all straggling pigs; the policeman to "keep an eye on all suspicious characters within ten miles of the palace;" the bailiff that he will keep the jury in private and "without meat, drink, or firing while they are sitting for a verdict." The Councillor of the Exchequer, with his three oaths in the name of God, the Saints and the holy Evangelists, is the most sworn man of all.

The term oath includes all that is meant by the various forms of obligation employed by religious and fraternal organizations. The church covenant of membership, the baptismal vow, the marriage ceremony, even among the Friends; the Christian Endeavor pledge, the curse, vows like that of Jacob,¹ Jephtha,² and those of crusaders and pilgrims in former days, are all expressions in different degrees of the same generic idea.

One of the special functions of the Church used to be the restraining of errings by pronouncing curses upon them. For the purpose of comparing it with other forms of oath that are to follow, a summary of the points of a cursing rubric of 1669 is subjoined. On days especially devoted to the purpose, the people came together and heard the sentence:

"God and the haly kirk curses all: That brakes franchise of the haly kirk; that gife nought to God; that interferes with the freedom of the haly kirk; that makes unlawful gain; that draws blood by violence; that makes agayne the pece of the king; that robbes; that bears false witness agaynst matrimony; that gives less than due honors; that puts unlawfully to purgation; that lays hand on prest or clerke in malice; that counterfeits the kinges seal; that despises the sacrament (heretica) . . . these are the poynts of the great cursing that our haly faders, bischofs, and erchbischofs has ordained." ³

The most formal and the most dreaded of ecclesiastical curses was that of the anathema or sentence of excommunication. When men departed from the tenets of their faith and could not be recalled, not only were sister churches warned against them, as to-day when members of the clergy are found in council to be guilty of misconduct, but public officers and private citizens were not allowed to permit them to approach within a prescribed distance, and the clergy were not permitted to attend their funerals. The ceremony was very impressive. Sometimes, as in the case of Spinoza, the room was darkened and the burning tapers were inverted at the moment when the awful sentence was spoken. Usually it drew to a close with the scriptural formula,⁴ *ἦτω ἀνάθεμα*, and the spiritual dignitaries who felt themselves empowered to pronounce such a judgment,

¹ Gen. XXVII, 20.

² Judges XI, 30-35.

³ Grose: Antiquities, Vol. III, p. 370.

⁴ I Cor. XVI, 22.

capped the climax of foreboding for the outcast and stilled the fraternal whisperings of their own hearts with the final *μῆλα* *ἴδω*.

The specific terrors of the curse for the people of every age and clime are clearly shown in both sacred and secular literature. Adam must walk through a desert, see nothing but thorns and thistles in return for toil, and feel that the future had only perpetual sorrow in store.¹ Similar was the curse upon Cain.² In the event of breaking their covenant, the Israelites³ were to have ague, consumption, sorrow of heart, hostile rulers, brass for sustenance, and iron for a bed of rest. Their cattle were to be stricken with plague. Their temples and sanctuaries were to fall. Their cities were to lie in the dust, and before death could bring relief, famine was to compel them to eat the flesh of their children. The curse of Dido upon the Trojan, foreshadowed in the *Aeneid*, Book IV, ll, 381-87, and fully expressed in ll. 607-629 duplicates the last form in almost every particular. Gudrun's curse against the perjured Atli⁴ and that of Sigrun against her brother Dag, who had killed Helgi in violation of an oath, are of a similar nature. Du Chaillu's translation of the latter is :

"Thee shall all oaths harm
Which thou to Helgi hast sworn
At the bright waters of Leipta.
And at the rain cold rocks of the sea.
The ship shall not move
Which should carry thee,
Though a fair wind to thy wish
Blows on it.
The horse shall not run
Which is to run with thee,
Though thou hast to escape from thy foes.
The sword shall not bite
Which thou drawest,
Except when it sings
About thine own head.
Then were the death of Helgi avenged
If thou wert an outlaw,
Out in the forest, lacking property
And all enjoyments,
And hadst not food
Unless thou tearest corpses."

The same dread calamities and woes of unrest noticed in these forms, appear in the imprecation upon Hadding.⁵ Amyntor cursing his son,⁶ and Althaea,⁷ beating the earth with her hands and invoking the powers of heaven and hell, are types

¹ 1 Gen. III, 17-20. ² Gen., IV, 11-12. ³ Levit., XXVI, 16.

⁴ Du Chaillu: *The Viking Age*, Vol. I, p. 555. (From *Atlakvida*, 30.)

⁵ Saxo Grammaticus: Ed. of Elton and Powell, p. 36.

⁶ *Iliad*, Bk. IX, 532. ⁷ *Iliad*, Bk. IX, 660.

of denunciatory expression among the Greeks. A peculiar English form is referred to by Grose¹ in giving a legend of "Arthur's Oon," one of the Roman monuments of Britain. It was destroyed by the owner of the land on which it stood, and "all cursed him by 'bell, book, and candle.'"

The craving for imprecation in formal oaths of another age is very striking in the ludicrous betrothal oath of Sir Edward Broughton to Mary Wilkes, 1660:

"I Edward Broughton doe here, in the presence of the great God of Heaven and Earth, who knoweth the secrets of all our hearts and the sincerity of mine at this time, upon premeditation and not rashly, invoke the God of Spirits to pour down his vengeance upon me and my posterity forever, not in ordinary manner, but in the highest nature, giving the devill power over our souls and bodies, that we may consume on earth and I may never walk upon the earth but with hideous shapes about me and a terryfyd conscience; and that I may not dye, but as Cain, have a mark set on me that men may shun me; and that I may outlive my posterity and that they may all be extinct and all damned; and that the devill may have a good title to me and carry me away alive; and that I may never appear before God but to receive the dreadful sentence, Depart from me ye cursed into everlasting fire to be at home with the devill and his angells:

If I do not utterly forbear all rash swearing and all drinking; if I ever find fault with anything that my wife shall doe or say; if I undertake any business without the consent of Mary Wilkes that is to be Mary Broughton; or if I should violate any request of hers; or if there should happen any difference between us (as with my first wife); Then, if I am the cause, let these and all the plagues that God can invent, be poured out on me like rain on thirsty ground. And I doe this heartily and voluntarily and with serious consideration and premeditation and now sign it with my own hand and seal it with my own seal."²

The forms that have been used in legal practice, although slightly monotonous, when carefully compared, are very interesting both as records of progressive steps in law and as conservers of the philosophical ideas of the past. According to Justinian,³ "*Jurare est deum in testem vocare et est actus divini cultus.*" The manner of taking the oath in the Roman court is thus described: "*Lapidem silicem tenebant juraturi per Jovem, haec verba discentes; si sciens fallo, tum me Diespiter salva urbe arceque ejiciat, ut ego hunc lapidem.*" At the last words the flint was dropped. In our own time the oath is regarded as a tacit recognition of powers without man and superior to him, yet closely related to him and capable of changing his pleasure into pain. Certain precautions in administering it have always been carefully observed by the guardians of the law. It is given in a formal manner; it is administered by persons especially authorized to do it; it must

¹ Antiquarian Repertory, Vol. III, p. 468-9.

² Grose: Op. Cit.

³ Institutes, III, 165.

conform to the ceremonies or religion to which the person sworn adheres,¹ and be substantially according to the formula legally provided for the occasion.² It must be given reverently and a simple affirmation answers every purpose. The words "so help you (or me) God" are not necessary to make it complete.

When this method of binding men was in its experimental stage, an unsupported oath was looked upon by the courts with extreme distrust. This gave rise to the oath of Compurgation. It was an oath based not upon the knowledge of a witness but upon his belief.³ The accused swore to his own innocence and a number of others (usually twelve) repeated some formula like that in the year 900, "By the Lord the oath which —— has given is clear and unperjured;" or that common in Normandy a century later, "What the accused has sworn is true. So help me God and the saints."⁴ When the compurgators were bishops, the process was called canonical purgation. Among the Norsemen, who carefully graded their oaths, the *tylftareid*, or oath of twelve, was the most binding and was always required to free one from the charge of murder. The *seitareid* and the *tveggja manna eid* were employed where the charge was less serious.⁵

As time went on vast numbers of wraithmen were called out for every trial, and compurgators at last rallied to their kinsmen as though enlisting in an army. The climax came when in the thirteenth century, according to the laws of the Saxons, a man could clear himself in this manner from any charge excepting that of theft when the goods were found on his person. It is hardly surprising, therefore, that Thorpe, the Lollard, in 1407, should refuse to make oath before the archbishop of Arundel, on the ground that men would swear to a lie as readily as to the truth.⁶

The Hebrews caused persons to be sworn in the most sacred place possible and this was naturally the synagogue. A sense of greater nearness to Jehovah came upon them there. This feeling⁷ had its parallel among the Saxons who administered the oath at their altars. When perjury grew common they increased the number of the altars and one could clear himself by going to churches, from three to ten in number, grasping the ring at the door, and swearing that he was innocent.⁸

¹ American and English Ency. of Law.

² Best's Principles of Evidence.

³ Blackstone: Commentaries, Vol. IV, p. 368.

⁴ Lea: Superstition and Force.

⁵ Du Chaillu: The Viking Age, Vol. II, p. 557.

⁶ Chambers Journal, Vol. XLV, p. 68.

⁷ 1 Kings VIII, 31-2.

⁸ All the Year, XLI, p. 523.

It was eventually discovered that, as among the Greeks, an oath was binding in proportion to the dignity of the god by whom it was sworn, so the reputation of a particular altar and its power over the individual imagination, added much to the force of an oath taken upon it. Lea¹ mentions the provisions that grew out of this fact at Bordeaux. In civil cases a claimant established his title in a suit for four sols, by an oath on the Gospels in St. Mayor's Court; for any sum from four to twenty sols, on the altar of St. Projet or St. Antoine; in one involving from twenty sols to fifteen livres, in the cemetery of St. Seurin. Suits for larger amounts required an oath on the "Fort" or altar of St. Seurin where those of doubtful veracity were always sworn.

The sacredness of the place and the emblems used was preserved in the Penetential of St. Darst, about the close of the sixth century, by requiring a forfeiture of four times the sum involved in the suit, for the breaking of an oath taken in church.² Gregory III³ provided a series of penalties: (1) for false swearing on a consecrated cross or on the hand of a bishop, three years of penance; (2) on the Gospels or on an altar with sacred relics, seven years. The Welsh statutes required similar service for absolution, but sixteen months sufficed if the act could be shown to have been committed involuntarily, and four months, if it was done to save life or limb.

In the last few paragraphs a hint has now and then appeared indicating that the corporal feature of the oath was strongly significant. This will be more apparent after a wider examination of facts with this thought in view. The Nagyars of Assam,⁴ like the Chinamen in some provinces place their hands on the body of a fowl warm and bleeding. Sometimes they touch a tiger's tooth or a spear, and pray to perish by it if they perjure. The Ostyak⁵ presents himself before the head of a bear and makes the motions of eating. The Parsee grasps the tail of a cow. The strongest oath of a Chinaman is by his joss stick burning.⁶ Sometimes, in the courts, he breaks a saucer against the witness box and is told that his soul will be thus broken if he fails to tell the truth. The Assyrians, Egyptians, and Jews⁷ had a custom of touching the thigh when taking an oath. A Gentoo touched the foot of a priest; a Brahmin the

¹ Op. Cit., p. 90.

² Lea: Op. Cit., p. 20.

³ Lea, citing Gregory III, De Criminibus et Remediis, III.

⁴ Butler: Journal Asiatic Folk Lore Soc., p. 316.

⁵ Erman: Travels in Siberia.

⁶ Best: Principles of Evidence, p. 162.

⁷ Gen. XXIV, 3; XLVII, 29; Jer. L, 15.

forehead of another Brahmin.¹ The Greeks and the Romans laid their hands upon their altars. At a later day the Bible was put upon the altar and the hand was placed upon it. The Mohammedan touches the Koran. Once he placed the right hand flat upon the open book and the left upon the forehead. The body was then bent forward until the brow rested on the book.² Both hands are now laid upon it and the attitude is erect. The Saxons rested their hands on sacred pillars,³ and the Frieslanders grasped a lock of hair with the left hand and made a cross upon it with two fingers of the right. Another contactual form is kissing the Bible.

It is also important to notice the attitude of the person sworn. Excepting the Jews, nearly all of the peoples described in the study stand with uncovered head. In taking the saucer oath, the Chinaman kneels. The Greeks, especially in the case of a vow, usually "held their hands up toward the gods." Sometimes the skirts of their garments were slightly raised toward heaven. The Israelite often stretched both hands upward as he named the name of Jehovah.⁴ The Frenchman raises the right hand as he says "je jure." The Dane had a practice of holding the thumb and two fingers of the right hand partly extended and slightly curved as the clergy of the Greek church hold them in benediction. So placed they are supposed to symbolize the Trinity. Some tribes stand in a circle with the one who is to take the oath in the center, and in the Porte, all rise while the oath is being administered. From these illustrations it is apparent that the attitude of one while being sworn has sometimes been that of prayer or supplication, sometimes of humiliation, and always of twofold submission.

It is evident that on one side this submission is to the formulated code of organized society. On the other it is a form of homage to the shapes of an illimitable world of indefinable fears. Our own court oaths leave these utterly vague. There is something more specific, which helps to realize them, in the Burmese obligation :⁵

"I will speak the truth. If I speak not the truth may it be through the influence of the laws of demerit, passion, anger, pride, false opinion, hard-heartedness, and scepticism, so that when I and my relatives are on land, tigers, elephants, and poisonous serpents shall seize and bite us that we may certainly die. Let the calamities of fire and water, rulers, thieves, and enemies oppress and destroy us. Let us be subject to all the calamities that are within and all that are without the body. May we be seized with blindness, deafness, and dumb-

¹ Abbott : Dict. of Law, 1023, Sect. 3.

² Ford : Living Age, LIII, p. 256.

³ All the Year, XLI, p. 522. Best : Prins. Evidence, Vol. II, p. 116.

⁴ Gen. XIV, 22 ; Deut. XXXII, 40 ; Dan. XII, 7 ; Rev. X, 5-6.

⁵ Vincent : The Land of the White Elephant, p. 171.

ness, leprosy and hydrophobia. May we be struck with thunderbolts and lightnings and come to sudden death. In the midst of not speaking the truth, may I vomit black blood and die suddenly before the assembled people. When I go by water may nats (spirits) assault me, my boat be upset, my property be lost; may alligators, porpoises sharks and other monsters crush me to death, and when I change worlds, may I not arrive among men or nats, but suffer unmixed punishment and regret in the utmost wretchedness amongst the four states of beasts, Hell, Prita, Beasts, and Arthurakai. But if I shall speak the truth, when I change worlds . . . may the seven possessions, the seven laws, and the seven merits of the virtuous be permanent in my person, and may I attain to the happiness of men and nats and realize merit, reward, and perfect calm."

The old Spanish formula suggests the preceding: "If I fail designedly of this oath, ye powers above torment my body in this life and my soul in the next with horrid tortures. Make my strength and my words fail. In battle let my horse, and arms, and subjects fail me when my need is sorest."¹

In giving a charter to the Franciscans, in 1463, Mohammed II is said to have done it with the following obligation: "I swear by the great God, the Creator of Heaven and Earth; by the seven books; by the great prophets; by the 12,400 prophets; and by the sabre which I wear, that no one shall act contrary to these commands while the monks do my bidding."²

A formula running back probably to the sixth century, bound the taker "by God Almighty and his only begotten Son Jesus Christ, and the Holy Ghost, and the Most Glorious Mother of God and ever Virgin Mary; and by the Four Gospels (held in hand); and by the holy Archangels." The Scottish Covenanter always named the Judgment.

The fetichistic idea appears in the last clause of the Deemster's oath³ found in the Manx statutes in 1422 and used since then. The oath begins: "By this book and by the holy contents thereof; and by the wonderful works that God hath wrought in heaven above and in the earth beneath in six days and seven nights, I swear that . . . I will execute the laws of this Isle . . . as impartially as a herring's backbone doth lie between the two sides."

In the reference to the Deemster's daily diet there is a suggestion of how much a man *is*, *what he does*, *what he eats*, and *what surrounds him*. Many class oaths and many personal obligations grow out of just such a soil. And it is both natural and philosophical. This was recognized by the Indian Law. It was there provided that a Brahmin should be bound by his truth; a Kshatriya by his horses, his elephants, or his arms; a Vaisya by his cows, his corn, or his gold; and a Sudra by his crimes. The Greek ruler found his scepter a powerful bond. The Roman farmer invoked Ceres; the trader, Mercury, god of thieves; the soldier swore by his spear, sacred to Juno at Rome; at Rhegium worshipped as Mars. The Ionian fisherman swore by his nets; the fowler by his snares. In Gaul the spear and the javelin were important. The tribes of New Guinea invoked some kind of weapon next after the sun. The

¹ All the Year, XLI, 522-3.

² All the Year, XLI, 522-3.

³ Lond. Folk Lore Soc., Denham Tracts, Vol. I, 186.

Frankish appeal was to the drawn sword, and in the seventh century, the sword and harness of the soldier were consecrated. In the same spirit, the Norse warrior used to say before making faith :

"Oaths shalt thou first to me swear :
By board of ship,
By rim of shield,
By shoulder of steel,
By edge of sword."

In the days of Elizabeth, fencing masters subscribed to certain regulations, making oath upon the cross of a rapier, and on the battlefield, soldiers often kissed the cross upon the hilt of a sword and died happy, although no priest was at hand to minister to them.

Similarly national standards, colors, heraldic emblems, plants, trees, animals, society ribbons, and badges, have formed a part in the most solemn enjoiners. The Byzantines swearing by their coins, make an example of confidence, that we, with our confession of faith stamped upon some of our questionable currency, cannot parallel ; but with our "gold bugs," "silver beetles," campaign watchwords and symbolization of principles everywhere, we can appreciate the meaning that attached itself to the eagle in the days of Napoleon, the wild boar of Philip the Bold, the leopard of Charles the Fair, the salamander of Francis I, the Bull of Claire, the Dragon of Aragon, and the goose, to which the Romans looked as their saviour from destruction.

This very brief and condensed sketch of some of the necessary elements in an oath, ways of taking it, formulas used in various parts of the world, and the stages of its growth, would be incomplete without noting some of the means used to keep it sacred.

So long as there was a severe ordeal in the ceremony and the effect of an infraction was believed to follow immediately, there was a tendency to tell the truth as the only means for avoiding pain ; but when the specific terrors of the moment were exchanged for the idea of future suffering, and there grew up a concept of a universal system of accounts in which the human party was not even bothered with a pass-book, because the future is distant to feeling even when thought pronounces it near, and because men forget so easily what they ought to remember most carefully when it conflicts with the instincts of the moment, perjury rapidly increased. Penalties were therefore devised and summarily administered to constitute a check. When taken to some especially dreaded altar, at the thought of their crimes, persons guilty of false witness often grew rigid, stood speechless, or fell in epileptic fits. Death was at one

time a punishment for perjury. Cutting out the tongue was another form. Among the Persians, if one known to be guilty approached the ordeal water as though innocent, he was given seven hundred blows with the horse goad. The statutes of Elizabeth decreed on the suborner "perpetual infamy and a fine of 40 l." If the fine was not paid, the perjurer was compelled to stand with both ears nailed to the pillory for a time and six months of imprisonment followed.¹ In the days of George II, an offender was sentenced to seven years, or transportation. Return, or escape without benefit of clergy, was felony. The present penalties, fines, imprisonment, and disqualification for giving evidence in court are without doubt the strongest incentives to truth telling connected with the oath for those who have so slight an appreciation of justice and so little regard for their word as to be easily inclined to perjury.

VIII. THE EFFECT OF BEING DOUBTED, RIDICULED, OR DETECTED, LYING AS IT APPEARS IN THE ATTITUDE AND EMOTIONS OF CHILDREN.

1. F., 13. Told something she believed to be true. Children laughed. Felt mad enough to kick them. 2. M., 6. When true statement is doubted, gets angry, stamps, shouts, sometimes strikes doubter. 3. F., 14. When my true statement is doubted I feel that I can say nothing more. I just say "I told the truth." 4. F., Adult. I want to hit the person who doubts me and I never feel like speaking to him afterward. 5. F., Adult. Once my true statement was doubted. I held to it until I had hysterics. I was coaxed to yield but I could not. It was a turning point in my life. 6. M., 11. When the boys don't believe me, I think they think I was fooling and I say "honest and true." 7. F., Adult. When any one laughs at my statements I wish that I might sink out of sight. 8. F., Adult. When laughed at, I feel that I never wish to venture an opinion again. I begin to doubt my mental capacity. 9. F., 9. When what I know to be true is doubted I am first indignant, then bitter, and I always remember it against the person. 10. F., Adult. When my opinion is ridiculed I feel as though I would not try to tell the truth next time. 11. M., 6. Told a wonderful story of the breaking of a mowing machine. An observer told the facts. Boy reddened, hung his head, but added, "by gosh, he lies." 12. F., 10. Charged with lying, and justly, raised her voice and said, "It is so, and you know it." 13. M., 13. When I tell my mother what I have seen and she does not believe me, I wish I had n't told her so many lies, but I tell her it is so even if she does n't believe it. 14. M., 15. When any one doubts my word I feel like giving him a good whaling to make him believe it.

Nearly 500 writers have described their own feelings or given records of their personal observation of children in regard to matters touched by the topic of this section. When some one has doubted their statement of what they thought to be true, 78 are "angry," "mad," or "sarcastic;" 28 feel "embarrassed,"

¹ Lea: Superstition and Force.

"hurt," "discouraged," or "heart-broken." 110 take an attitude of defence; 105 of these look the doubter in the eye. 94 "set their lips" and speak in a voice either "loud" or "shrill." 57 "stamp." 141 think they are right and "argue the matter." 62 asseverate, call witnesses, and leave nothing undone to prove their position. 72, of a more subjective type, "flush," "bow the head," are "silent," or "speak rapidly with trembling voice." Some feel ill. 17 cry. 16 use the question of appeal. 28 appear disinterested or think that the "truth" is not changed though the "statement" of it be doubted. 5 want to convince an opponent and "exult" over him. 11 feel as though they were really wrong; 10 that the world is going against them; and others care less for truth.

When ridiculed, 77 are "angry," "stamp," "want to hit," and say "sarcastic," or "hateful things." Only 19 speak of defending themselves, while 81 are "embarrassed," and feel as though "ill treated," or "struck a blow." A few speak in their usual voice, many more in trembling, uncertain accents, and show nervous movements. 20 cry. 3 go away and hide themselves. 69 "do not feel like offering an opinion again," want to "leave the room or person," or "sink out of sight." 3 have the "impulse to lie" next time, and 9 "dislike" the person who laughs and "cut" him afterward.

Detected in a lie, 77 are defiant, manifest anger, clench hands, look boldly at the accuser at first and speak with firm voice. 90 stand with bowed head and downcast eyes, show nervous movements of the hands and body and speak with weak voice, or keep silent. Sometimes there is an effort to change the subject. 2 hide the face, 2 are scornful and "don't care." 13 cry.

A comparison of the facts presented, relating as they do to states that seem so different in themselves, strongly suggests that the phenomena which follow the doubting of what children tell, ridiculing their opinions, and detecting them in falsehood, present so many common features that they make a very unsafe criterion for judging of the correctness and sincerity of a child's statement. One reason for this is that children, admitting the reality of objects without question, and knowing nothing of the avenues by which illusion steals into their sense perceptions, never doubt the results of their own observations. Being taught to rely upon others, they are in the habit of giving implicit confidence to what others tell them; therefore, because of this combination of ignorance and trust, the doubting of their assertions always strikes in upon the self like a personal shaft. The reaction against it depends entirely on the temperament of the child but it may present precisely the same symptoms that follow the detection of a lie. On the other hand an habitual liar may assume the manner of one of a motor habit in the de-

fense of an honest cause. Ridicule brings more utter abjectness than either of the other conditions named. Nothing is more cruel or unjust. Doubt gives the first impulse against truthfulness because it may taint with indifference. It is a rudimentary negation of the desire to tell things exactly. This is followed by lack of interest in seeing things accurately, on which the certainty of so much of sense knowledge depends. Too thoughtful care cannot be given to this matter and to the discrimination of the motives of children in telling their stories, imaginative, false, and true, as Dr. G. Stanley Hall has shown.¹

IX. THE FEELING WITH WHICH ASSEVERATIONS, ORDEALS, AND CEREMONIES ARE USED BY CHILDREN.

No sections of the syllabus were so generally answered as those upon the topics named above. 2,258 persons contributed some fact concerning their use. One group of 1,309 is made up of persons from the age of ten to adult life who give their own experience. 1,075 have used "some of the forms" of IV, V, and VI. 236 have not used them, either because of fear or parental instruction against them. 29 do not remember ever having heard the stronger forms like "May God strike me dead," and "I hope to die." 827 always felt that they "must be believed" when using them; 679 "never dared to use them except when telling the truth;" and 670 were always "inclined to believe other children when they were willing to use such expressions." 311 confess to having "outgrown" the strong fear that attended strong asseverations and ceremonies in childhood; 276 say that the "fear still persists" 289 regard them as "stronger than an oath;" 167, as "weaker;" The majority did not make a comparison. The grammar school writers have great faith in these forms as compellers of truth. Of the older observers, many of whom are teachers, 371 say that there is a much greater probability that a child is telling the truth when he submits to ordeals or uses these forms of protestation, and 25 think that there is always some form beyond which no child dares to go when telling what is false. [See VI, 17.] Several recognize the claims of individuality by saying "it depends on the child." On the other hand, 574 urge that such forms give the idea that truth is weak and little respected in itself, that these expressions become habitual and lose their force, that liars use them to gain confidence in their own statements and to gain greater credence with others, and that the general effect is against the cultivation of a habit of stating things simply and accurately.

¹ PEDAGOGICAL SEMINARY, Vol. I, p. 211.

Both views are probably correct. These acts constitute a sort of graded series. Under certain conditions, each element in the series comes at a particular period of life naturally, and has its run, like the diseases of childhood. During this period its power is great. When its function is outgrown, the form is discarded "like old clothes" and a new one comes like a new garment to please, to be exhibited, and to keep the conscience free from that which is likely to spot the fabric of truth. In time, however, the child, having passed through the stages of the racial babyhood, grows into a comprehension of the codes which are common among men and accepts them as his own.

It hardly seems that there is any great danger in these instinctive acts. They are strikingly evolutionary. Yet training into the idea of the dignity and power of truth ought to begin early with simple truth telling. It ought to be fostered by trust and followed throughout childhood. There need be no fear of robbing the ceremonies of any benefit which they have to confer, since 909 writers say that they were constantly warned against such acts and expressions at home, but continued to practice them until other ideals made it desirable to forget them.

Several conditions involved in the data are apparent throughout. Back of all else, there is evidence of a passionate love for things, an impulse to believe in them, to grow into them, and to be ingrown by them. There is that which suggests an unconscious, unformulated, and inexpressible desire to realize what selfhood is and to preserve its identity. Such a realization demands a static basis. This is reached when the elements of doubt give place to a personal assurance of rest in a larger unity—when a chaos of unrelated and seemingly contradictory constituents yields to the cosmic law of a central correlating attraction.

Inseparable from this instinct for certainty is fidelity of testimony. Every moment calls for a marshalling of forces to meet new conditions. The laws of society demand truth in words and in works. Such faithfulness of evidence involves: (1) Accurate perception of relations and forces; (2) An impulse to express truth; (3) Ability to do it. In the papers studied, all the evidence tends to show that neither errors of perception, nor inability to tell what has been perceived are noted as a ground for doubt when children are comparing their experiences, but, from some cause—it may be the old animal instinct to guard against enemies and accidents; it may be the bare-faced lies which parents sometimes tell their children; it may be the result of careless jests—there is abundant proof that one's sincerity at the moment of speaking is always suspected. The point of the formal oath seems to rest here. It is such a suspicion that underlies all the empirical proof, calling of witnesses,

wagering, asseveration, ceremonies, and oath-taking, described in the preceding pages.

With children every new idea is a little fetich. The word which symbolizes it is used at every opportunity. It is one limit of the instinct for categories; the opposite limit is the formal oath in the name of the All-containing, All-controlling Category. Every man has his own ultimate standard. The primitive mind was content with swearing by a bird, a fish, a weapon, or a star; but the divinity of Pythagoras was the number 4. The miser *lives* an oath by his gold; the gambler by his luck; the society man by conventionality; the farmer by the plow; the editor by the pen; the belle by the fashion plates; every one by his highest ideal of utility or excellence. If Kant had formulated a personal oath, he would have re-echoed his "God, Freedom, and Immortality;" Richel would have bound himself by the power of Feeling; and Lotze by the spell of Worths, or the sublimity of the Good-Beautiful.

But the fetichistic idea is not the only one running through the pages of the study. It has so many aspects that no adequate summary is possible. However, two deductions of general philosophical interest may be made:

1. Every step taken by children in their positive methods of manifesting certainty, so far as it is concerned with knowing at all, rests on the principle of immediate knowledge.

2. There is a remarkable progressive parallelism between the ordeals and ceremonies of children and those by which the race has evolved the principles of law.

If one permits the records to teach their lesson for pedagogical application, they show:

1. The trusting spirit of childhood;
2. The impulse for right;
3. The penitent spirit, shown in the willingness to sacrifice the most cherished pets and toys for truth;
4. The martyr spirit, apparent in the ordeals and penances, and heightening the idea of the love of truth and certainty already mentioned;
5. The mystic spirit, cropping out in the ceremonies and oaths;
6. The cumulative force of asseveration (Ordeals, VI, 17);
7. That doubt and ridicule give the first impulse toward untruthfulness and that truth is fostered by trusting;
8. That falsehood in children is usually the result of ignorance or error rather than of evil intention;
9. The organizing instinct among children; (This may be made one of the strongest levers in school economy. At the same time nothing can be turned to better account in developing individual character.)

10. That more effort to answer to the need of affection felt by the pupil, and to shape his sentiments into harmony with the "Good-Beautiful" is desirable;

11. The evil of teaching by negation.

PART II.

Every great principle has its negative application. In tracing the development of standards for enforcing accurate testimony, it has been shown that the formal oath with its attendant ceremonies and privations is the highest compulsory standard in use among men. But, as oftentimes in the past, the efficacy of this means is put in jeopardy by the wholesale practice of common swearing. This practice is a part of the capital of the roisterer, a kind of half-ritual preparatory to the toga virilis with boyhood, a fad of the school girl, a piquant practice in society, an automatic and sometimes even cowardly backward glance with too many who have professed to renounce their worldly sins, and, occasionally, in colorless phrases, it gets new life from the lips of clergymen who soberly declaim against it.

Oaths are so numerous and their use is so common that one rarely thinks of their origin. When this does come to mind, there is so little known of the affective states out of which all forms of expression have grown, and such a conflict of opinion on so many points touching the field, that it is almost hazardous to offer anything concerning the source of these "rabble charming words that catch the ear" unceasingly. Yet the fear of error does not always serve the cause of truth and, on the whole, it seems as though an attempt to get at some idea of the scope of our present vocabulary of expletives, to examine their nature, and at least to trace remote analogies to them, where such exist, is worth while even at the cost of many mistakes and charges of presumption. This work is modestly attempted in the hope that there may be something in it for others to work upon, if nothing more.

SOME COMMON OATHS AND EXCLAMATIONS.

I. PROFANE OATHS.

By the Eternal, God, Christ, Jesus, Jesus Christ, Jesus H. Christ, Jesus God, Jesus Christ and John Jacob Astor, the Father Above, the Father of Light, the Great Father, the Merciful Father, the Gracious—, the Great—, the Holy, the Great Holy, the Good Holy, the Holy One, the Holy True, the Holy Spook, the Holy Ghost, the Lord of love, the Merciful Goodness, the Great Jehovah, the Great Lord, the jumping Jehovah, Jehovah, the Lord of Heaven, Heaven, the Lord God of Israel, the Long Suffering One.

These are profane according to the standards of the church, but in law it is not necessary that the name of God or Christ be mentioned to constitute profane swearing. If the list offered

here be compared with one of Sharman¹ gathered from the "Satyre of the Three Estaites," (Sir David Lindsay, 1490-1555) and "Gammer Gurton's Needle," ascribed to Bishop Still, it will be seen that the manner of thinking upon God, as well as methods of worship, have changed very radically during three centuries. In the Sixteenth century men were touched by the miraculous in God's work; impressed with Christ's Passion, and inclined to make a fetich of the cross, the robe, the wounded side, and the sacrament. It was their practice to adore emblems where the men of the Nineteenth century worship attributes. One century pours out the expression of overflowing feeling; the other offers as its tribute, the incense of the old feeling intellectualized.

Of the period covered by Lindsay, the oaths found in the works of Rabelais are the most flippant and blasphemous. It was his delight to make the monks, whose inconsistencies he scathed, swear the most revolting expressions. Nothing else can be inferred from the apologetic *da jurandi* which was often thrown in after "by G—" and coarser forms. Another prominent feature of the oaths of this writer is their denunciatory character.

In hearing the stronger forms of swearing, any one who has been carefully educated receives a psychic jar. 524 persons told their feelings at hearing profanity, when they gave a record of oaths that were familiar to them. Embarrassment, surprise, chills, weakness of the limbs, sensations of fear, impending calamity, pity for the offender, sorrow, disgust and a tendency to despise such as have had favorable surroundings but swear in spite of their advantages, are the emotions which these writers note in themselves when another indulges in violent cursing or protestation.

Naturally opposed to this is the fact that men are social and language is the means for manifesting the social instinct. In any given circle, next after similarity of dress, similarity of dialect is the surest passport into the good graces of its people, assuming, of course, a fair degree of fitness in one for approaching men. Now those who are religiously inclined do not wish to swear, nor do they like to seem wholly different from their friends in forms of expression. Therefore, forgetting that the faith holds out before them the idea of a kind of inhibition which gives free utterance only to what is simple and exact, such often make a compromise of expressions which clear the strict letter of the law against profanity, but which in no sense make the habitually profane man feel that they are different in meaning from his own. The methods

¹ Cursory History of Swearing.

of softening are many. All kinds of phonetic changes are made. There are crases, elisions, examples of tmesis, metathesis, and substitution of terms, as well as metonymies and far fetched associations. There are also remnants of formal oaths, nonsensical phrases that "catch," errors of pronunciation, traces of traditional customs, past practices of church and State, memorials of ideas that attained some degree of dignity and became objects of warm interest but never became quite proverbial, expressions now wholly faded but once full of meaning to the primitive faith and imagination, exclamations that have grown into oaths and oaths that have dropped back to mere exclamations. The most fitting name for all these expressions which seem almost to have been blown together by the four winds is

II. TRIVIAL OATHS.

1. *Differentiations from Profane Oaths.*

By dad, bedad, begad, egad; by gad, gid, gob, gud; by Ge'frey, Godfrey, Godfrey mighty, gashfrey; gash, garsh, gish; by the mighty goash, goash almighty, goshy mighty; by gee; by golly; by gee goash, golly goash, gee rod, gee holy, holy gee, gewhitaker, gewhillikin, or jewhillikens, gee Mose Hannah; by dam, darn, dang, the mighty darn, by dingnation, damnation, timenation; by gol; by gol darn; by cliat, cripes, the holy cripes, jiminy cripes, Christopher, Christmas, jiminy Christopher, jiminy Christmas, the holy Christopher, the holy Christmas, gee Christopher, Christmas alive, Christmas and New Years; by chriney, gen chriney, Jeems Rist, Jeems Rice; by jegus, jeeswax, jiminy jeeswax, jiminy cheeswax, je's or gis, golly Moses, geeswiz, gee whiz, gee swayzes, and the yumping yesus.

Granting that these are generally used as exclamations, automatisms, or provocatives of humor, the effort to escape from open profanity, so clearly apparent in every form, shows a consciousness of the nature of the act, that makes the use of such trifling expressions seem worse than honest swearing. The derivation of nearly all these forms is so thoroughly in accordance with established principles of phonetic change that comment is unnecessary. Godfrey and Christopher enable the user to turn a phrase innocently, to give a casuistical explanation of his oath and to clear himself of the charge of profane intention in using it. The latter term may have resulted from the practice of swearing by the saints.

Jiminy (jemony, geminy) suggests gemini, the Latin for twins. This recalls the zodiacal sign of Castor and Pollux and *καὶ τὸ Σιὼ*,¹ the favorite oath of the Spartans. A less satisfactory derivation makes jiminy a crasis for Jesu Domine.

Expressions like gewhitaker, jewhillikins, geeswiz, and gee whiz are hard to account for. Writers on slang call them

¹ Xenophon: *Anabasis*, Bk. VI, 6, 34.

"euphemistic oaths." These seem like forms that might result from trying to break off the habit of swearing. Any one who has ever tried to inhibit expressions that have become reflex, knows how often they are found half said on the lips and are finished in a different way under the direction of consciousness. The forms above indicate a beginning of the oath "by G—" or "by Jesus," and a shift in finishing that brings in, perhaps, the name of some man whose initials fit the beginning, or causes the expression to die away with something similar in sound to the habitual term or, possibly, wholly unlike it. In *geeswiz*, element by element, there is almost a perfect phonetic resemblance to the sound of Jesus, yet it and the following word may have been caught from a blundering reading of *gewisz*.

"*Gis*" is without doubt a contraction of Jesus. Sharman says¹ it is a "feminine oath" and that it is taken from the name of St. Gisleen (whose identity and mission are both in doubt). It has been suggested that the word is a crasis of the letters I. H. S., which probably account for the middle letter in oaths like "Jesus H. Christ."²

The attempt to take away the harshness of swearing is not peculiar to Americans. The Italian had his "Dio mio," "Madonna mia," "per Christo," and "accidenti" for moments of despair, pity, and anger or hatred, but in better humor, he swore by "capers" and "cabbages." The *ventre bleu*, *corbleu*, *parbleu*, *morbleu*, and similar exclamations of Victor Hugo's writings, in the time of Louis IX, were *cordieu's*, *par dieu's*, and *tête dieu's*. Louis's statutes provided that profane swearers should have their tongues pierced with a hot iron. Sharman gives authority for the story that the courtiers asked leave to substitute the name of *Bleu*, the favorite dog at the palace, for *Dieu*; it was granted, and the Frenchmen still swore and kept their tongues intact.

The same thought of softening appears in the oath of William I, "by the splendor of God," and in that of William II, "by the face of Lucca," meaning an image of the face of Christ on a crucifix at Lucca. In the *Canterbury Tales*, the oaths "by the nails and blood," and the "'ods life," "'ods blood," "'ods heart," "'ods bodkins," "'ods zooks," "'s life," "'s death," "'s blood," "zounds," which are so frequent in the works of Shakspeare, Sheridan, Congreve, Beaumont and Fletcher, and many others, give evidence of the same intention.

¹ Op. Cit., p. 193.

² Section I.

2. *Containing Allusions to Saints, Priests, Prophets, Ecclesiastical Rites, and Persons or Places Conspicuous in Church History.*

By the saints above, all the saints, the blood of all the saints, the blood of Moses and the saints, the saints in heaven, the holy saints, holy saint Mary, St. Christopher, Mark, Patrick, Peter, Daniel Defoe and the Saints; the Fathers, by Moses, Moses and Aaron, the great or holy Moses, the holy Moses and the angels, the laws of Moses, Moses and the Ten Commandments; by jiminy Moses; by Peter and Paul, the glory of Peter, the great, good, gracious Peter, the holy Peter; by Job, the holy Job; by Jehu, Jehosaphat, Nebuchadnezzar King of the Jews, Solomon; by the beard of the prophet, the priest's gray beard; by Judas, by Judas paste, by Judas priest, by the jubitus priest; by the land of Goshen, Jericho, Jerusalem, the mountains of Jerusalem, the land of love; by the holy smoke, holy cinders, John Rogers; the holy day, the heavenly day, the great day, the great day in the morning, the land of everlasting living, the great day and night, the great glory; by all holy things, by all that is good, by all that is good and holy; by my soul; by the cross of gold; by the gospel; by Gabriel and his trumpet; by hokey, by hocus pocus, by the hokey pokey, by the eternal hokey pokey; by zukes, jukes, jucks.

Of the 70 forms not one-third would be readily caught by the child or adolescent. They are too long, too labored, and too abstract. They contain fossil prints of qualities once believed to be the only seal of perfection. They are judgments that epitomize a life in a figure. One-third of all center about something characterized by holiness. Patience, wisdom, skill in ruling, prophetic power, horror at the thought of duplicity in sacro-sanct surroundings, and in places famous by reason of holy associations, are all commemorated in these solemn phrases. Some recall the days when saints were invoked, no more on account of their holiness than because of their power over disease and destiny. Saint Christopher and St. Mark could avert sudden death; St. Blaise kept bones from sticking in the throat; St. Anthony had control over inflammations; and St. John over epilepsy and poison.

Some of these oaths have doubtless grown out of the idea of patron saints for trades, and occupations, towns and cities. St. Anne presided over riches and restored lost articles; St. Dunstan was the genius of goldsmiths; St. Peter became the guardian of Rome, a place once held by Mars; St. Patrick was the patron saint of Ireland; and St. Mary was supposed to bring peace and kindly ministration to many places like Bruges, Brussels, Mechlin, and the cities of Holland, Sardinia, Sicily, Switzerland, and Russia. Her mission is nicely expressed by Googe in his translation of Naageorgus:¹

"To every saint they doe his office here assine,
And fourtene doe they count of whom thou mayst have aid divine;

¹ Brand: Popular Antiquities, Vol. I, p. 363.

Among the which our Lady still doth hold the chiefest place,
And of her gentle nature, helps in every kind of case."

According to Grose,¹ the oath "by Peter and Paul" came from the practice of invoking them as a part of the ceremony of detecting thieves by the ordeal of the "sieve and shears." When saints and angels are invoked together, it may be the result of a feeling that saints have especial ministering spirits, or a survival of the teachings of men like Plato, Plutarch, Empedocles, and Origen concerning protecting spirits.

"By Judas paste" is the sentence of the ages upon one who could do an act of treachery at the time of a sacred festival in an age when the mere eating of bread with a stranger formed a hallowed bond. "Judas priest" may be a corruption of the last expression. "By the jubitus priest," the force of which probably lies in the adjective, is perhaps an incorrect spelling of jubatus, crested; this makes a natural reference to the wearing of fillets when sacrificing or declaring prophecies.

It is doubtful if the mention of Goshen or Jericho in swearing ever recalls nowadays the importance of the former to a people in a critical time, or the marvellous capture of the latter. Jerusalem, aside from being the holy city of both Christain and Turk, and the center of the most lasting associations in other respects, is a monument of conquest, destruction, and Phoenix-like recovery. Any city which survives twenty periods of conflict and passes through the hands of half a dozen peoples, must touch the world with wonderment and become fixed in its thinking. Its first syllable is also half an oath by imitation.

Brand² would make "holy smoke" a reference to the incense fires kindled on all the hills as an emblem of immortality, on the eve of All Souls. This custom was common during the Middle Ages. But it is only a survival of the practice of burning incense on altars and making burnt offerings in earlier times among the Arabians, Phoenicians, Hebrews, and Indians. It brings back the Greek, vaporizing flesh that it might become available to the dead, and the Roman and the Carthaginian who kept the fires of faith from burning low. "Holy cinders" is possibly connected with the idea of lustration by ashes, but it seems more like an attempt to vary the previous expression by contrast.

"John Rogers" is remembered as an example of steadfastness in the faith. The "holy day" may be Sunday, Christmas, the Great Sunday of the Greek church, or the Holy Sunday of the Anglican. The idea of the judgment and of the future life appears again in "by the great day" and "by the land of

¹ Provincial Glossary of Superstition, p. 55.

² Antiquities of Great Britain.

everlasting living." The same is true of "by my soul," and "by Gabriel and his trumpet."

"By the cross" recalls both the function of the cross in formal oaths and its efficacy against witchcraft and all sorts of evil. The symmels of Passion Week were once marked with a cross before being baked. In Scotland everything from a silver spoon to the "torwoodie" had a cross upon it to avert evil spirits; and within a half century, Durham farmers have placed a cross on the shoulders of their sheep over the portion that once fell to the priest as a peace offering.¹ The cross appears again in the business of every day. The man who cannot write, makes a cross between the parts of his name written by another. To most people it is merely a mark of illiteracy, but it was once an oath required of scholars, kings, and nobles after their signatures as an evidence that the document was genuine.² "Zukes" is merely an auditory spelling for "zooks," his (Christ's) hooks, a reference to the nails on the cross. "Jukes" and "jucks" may be corruptions of the same expression, although the latter may be either a derivative of "shucks," a name given to the "blue backs," or notes of the Confederacy,³ or it may have a coarser origin, as will be shown in another section.

"By hocus pocus" and the forms from it are supposed to be from an epithet in derision of the papistical sacrament, made into an oath. It was one of several names employed by the irreverent when referring to this ceremony, and is said to have sprung from the indistinct manner in which the priest pronounced the words, "hoc est corpus" in the service.⁴ Brand,⁵ quoting from Ady's "Candle in the Dark" makes this a juggler's term. He speaks of a man whom he says was called the "kings most excellent hocus pocus because, at the playing of every trick, he used to say: 'Hocus pocus, tontus, talontus, vade celeriter jubeo,' a dark compromise of words to blind the eyes of the beholders." Butler uses the idea of cheating or magic in

"Convey men's interest and right
From Stiles's pocket into Nokes's
As easily as hocus pocus."⁶

"By the beard of the prophet," and "by the priest's gray beard," are primarily oaths of Jew and Turk and Persian. In the

¹ Henderson: *Folk Lore of the Northern Countries*, p. 257.

² Southwick: *Wisps of Wit and Wisdom*, p. 50.

³ De Vere: *Americanisms*.

⁴ Southwick: *Op. Cit.*, p. 148. Tillotson: *Discourse on Transubstantiation*.

⁵ *Pop. Antiq.*, p. 61.

⁶ *Hudibras*, III, 3, 713.

books of Marryat, Jonson, and Scott, there are numerous forms referring to the life or dress of the prophet. Among other expressions, "by the holy Allah," "by the holy prophet of the Paeba," "by the corner stone of the Caaba," and "by the beard of the prophet" occur. Aside from the "gray," to which reverence and oracular power were ascribed, the beard was once a mark of consecration. It was said of the Nazarene, "No razor shall come upon his head all the days of his separation."¹ The hair was a special pledge to God until the day should come for the fulfillment of the vow, and the oath by the beard probably grew out of such a sentiment.

3. *Making Reference to the Blood, Relics, or Manes of Ancestors and Heroes.*

By the blood of my ancestors; by all those who came before me; by the blood of my fathers; by the blood of my grandfather; by the ashes of my grandfather; of George Washington; by the spooks; by the ghost of my grandmother; by my father's ghost; by great Cæsar's ghost; great Cæsar's dead ghost; dead ghost on a bicycle; by the great spooks; by the ghost of Jehosaphat; by the ghost of St. Peter; by the shades of Webster; of Priam; by the grave; by the great catacombs; by the bones of St. Barnabas.

These are the last traces in civilized society of ancestor and ghost worship, once so nearly universal that evidences of it are found wherever there is proof of the existence of any religion whatever. While we are utterly forgetful of the fact, these keep us in rapport with Greek and Roman lifting up their voices to the Manes of their friends. They help us to find interest in the shrines of the dead in the East. They touch the pilgrimages of the followers of Mohammed; the sacrifices of the Bedouin at the grave; the worship of fetiches supposed by the Sandwich Islanders to be animated with the spirits of the departed;² the naming of children after an ancestor to keep his spirit in the family, among the Polynesians and some East Indian tribes; the taboo among certain American tribes against calling the name of the dead;³ the preservation of the bones of ancestors among other tribes;⁴ and the distribution of such relics among the Caribs and, generally, among the Yuga and Chincha tribes of Peru.⁵ They are likewise related to the belief that departed spirits return to form the spirits of unborn children;⁶ to that among the Amazulus who fancy that a shade loves to linger about the place where its embodied days were

¹ Numbers VI, 5.

² Spencer: *Prins. of Sociology*, Vol. I, p. 333.

³ Beach: *Indian Miscellany*, p. 301.

⁴ Brinton: *The American Race*, p. 54.

⁵ Squier: *Travs. and Experiences in the Land of the Incas*, p. 190.

⁶ Bancroft: *Native Races*, Vol. III, p. 514.

passed;¹ to the superstitious regard of the Esquimaux for a shadow; and to the practice once common among the Quiches of placing a stone between the lips of the dying to receive the departing soul.²

From the superstitious belief that spirits return to linger about old places and, from within or without, exercise an influence over the happiness and the life of surviving friends, it is easy to see how ghosts and relics might naturally become aids to adjuration.

Among the Romans, "testor majorum cineres" was almost a superlative oath. "By the dead at Marathon," made a soul-binding spell for Demosthenes. In Persia, the strongest oath was "by the holy grave," meaning the grave of a Shah; and in England, the practice of swearing by the grave became so common that, in giving the ninth charter of London, Henry IV expressly forbade it.³

The adjurations by blood, owe something to pride of lineage as well as to the bond of affection. The idea that blood is thicker than water is not ephemeral. The noble deeds of an ancestor, his military feats, if a knight or a soldier, and the symbolism of the family arms, are lasting memorials. Their power is felt by all. In the oaths by "the ashes of Washington," and the "ghost of Cæsar," the memory of a national hero is preserved. In those by the "shades of Webster," and "of Priam," greatness in counsel is the leading thought. One has been caught by fancy from the pages of the classics; the other, perhaps, from the poetic flights of orators who partly borrowed it and partly felt the spell within the name. "By the great Catacombs," is a kind of universalized adjuration by the grave. It calls up the memory of the great subterranean galleries of the dead at Cairo, Naples, Paris, and Rome. "By the bones of Barnabas" is related both to the worship of relics and to an old-time practice of administering formal oaths at shrines where the relics of the saints were preserved.

4. *Relics of Formal Oaths.*

In law, the formal oath generally closes with a solemn enjoiner. In the statutes of Charlemagne, as in the days of Justinian, it was "sic me adjuvet Deus." The Scandinavians had "so help me Frey;" the early French, "si m'ait Dex;" the Germans, "so mir Gott helfe;" and the English, "so help you (or me) God." All of these have left a mark on common swearing. Their stereotyped form spoils them for

¹ Bancroft: *Native Races*, Vol. III, p. 515.

² Gallaway: *Religious System of the Amazulus*, p. 410.

³ *All the Year*, Vol. XLI, p. 522.

humorous effect unless some common name is invoked to close them. The forms gathered from the syllabus were :

So help me—; so help me Great—; so help me God; so help me Abraham; so help me Moses; so help me Isaac; so help me John Jacob Astor; so help me Judas Iscariot; so help me David and Davy; so help me Mike, Maud, Rebecca; I solemnly swear; I will take my solemn oath, solid oath; I swear by the holy Bible; I swear to God; I swear to Gideon; I swan to man; I swear; I swan; I swanny; I swow; I swum; I snum; I snor; I swon; I swamp; I van; I vow; I vum.

Abraham, revered by Hebrew, Mohammedan, and Christian, is naturally associated with anything in the name of God and the faith, and for this reason would be invoked almost as readily. For variety, "Isaac" is naturally substituted, and the humorist completes a trio of associated names with "John Jacob Astor." "So help me David," may have come from one of the scriptural names for Christ, from the practice of making affidavits in legal processes, as some writers say, or from an invocation of "Old Davy," a common custom in the North of England.¹ The last name is synonymous with devil, and is perhaps related to the Davy Jones of sailors. Jesting, and the attempt to soften terms as noted in PART II, 11, will explain the remaining forms in this group.

5. *Forms in the Name of a Hero, Ruler, Sovereign, or Symbol of Authority.*

By George, the great and good George, George Washington, George Washington and Marquis De Lafayette; by Augustus Cæsar, Peter the Great, the good governor, the power of the king, in the name of the king, in the name of Cæsar; by the royal robe, the kingly crown, the purple robe, the great United States; by Christopher Columbus, the holy American Christopher, Amerigo Vespucci, Daniel Webster, Gordon Bennett; by the rod of Aaron; by my father's sword.

The first form in the list goes back to the House of Hanover, by the members of which it was used in the name of St. George, who in the fourteenth century became the patron saint of England.² "The great and good George" probably has a special color as a memorial of the central figure of the American Republic. "Christopher Columbus" and "Gordon Bennett" have a shadowy suggestion about them not unlike certain of the forms in PART II, 11, but possibly they may be used with the same intent as those last named. All the others in the list commemorate power, foresight, authority, achievement, or symbols for these.

6. *Forms Suggesting Chivalry.*

By my faith, by my honor, by my life, by my love for you, by your

¹ Grimm: Teut. Myth. Stallybrass's Tr., Vol. III, p. 989.

² Chatto and Windus: Book of Slang, p. 106.

life, by your love for me; for the love of Maud, Mike, Bell, Jerusha, John; in the name of Bridget.

Scott's knights swear by their honor and their faith. The oath of Roman knighthood was the same. According to Sharman and Ducange, the English courtier often swore by the love token on a maiden's sleeve. At banquets, from time immemorial, it has been the custom to pledge to the graces of the ladies, whether they were present or absent. Philip of Burgundy is said to have declared war against the Turks in the name of the Virgin, the ladies, and the pheasant upon the table at which he sat. There seems to be more of levity about the remaining forms of the section than of the passion of the days of romance. The invocation in the name of "Bridget" may have come from reverence for St. Bridget, on whose eve the common people of Ireland still make merry over tankards of ale.

7. *Hortatory Forms in which the Basis of the Appeal is Love, Belief in a Principle, Allegiance to a Cause, and the Consequent Duty of Personal Sacrifice.*

a. *For the love of* God, Christ, the Lord, mercy, truth, peace, goodness, all that is holy, the Fathers, the church, the country, Heaven, the land above.

b. *In the name of* God, the Lord, Jesus, Jesus Christ, Jehovah, satan, the devil, the queen, Heaven, the saints, grace, mercy, goodness, wisdom, wonder, common sense, Christendom, common things, all that is gracious.

c. *For the sake of* God, the Lord, Christ, Jesus, all that is good, bygone days, friendship; for mercy's, gracious', goodness', pity's, Heaven's, the land's, your mother's, George's, Maud's, sake; for goodness' sake alive; for pity sakes alive; for the land of the living.

All three groups place one face to face with his ideals. They call out, but do not formulate the feeling that men are working as one for a universal end; that each in his better moments sees this truth, and in his ruder moments may be recalled, if his relation to the great whole be brought to mind. Past, present, and future are included in the forms. Groups a and c are the easiest forms to receive. B may be said with an air that betokens authority straight from the personality, or principle enjoined. It has a suggestion of compulsion where the others please with the thought of power to choose. It is constraint from within against restraint from without. It is reaction to the standards of a necessity which results from accepting a system, against reaction according to the more pleasurable necessity of working out that to which one aspires. In every case named above, the oath is not by the isolated person or thing named in it, but by all that the invocation means in human thought and progress. In nearly every case, there is a

recognition that each personal action modifies not only personal, but universal pleasure and pain.

8. *Oaths by Natural Objects, Forces, and Phenomena.*

By the sun; by the moon; by the moon's silver light; by the moon and stars, the sun, moon, and stars, the great stars, the stars of light, the stars of night, the man in the moon, the great clouds, the holy blue; by thunder, the holy thunder, thunder and lightning, thunder and guns, thunder and spikes, thunder and pig iron, thunder and blitzen, donnern und blitzen, donnerwetter, blood and thunder, the hurricane, Harry Cane.

These phrases are an echo of the days when men lived under the open sky and close to the heart of nature; felt the spell of the invisible in the visible; deified that which they could not comprehend. We swear by the sun knowing that its radiant beams have been a given time on their way to us; by the stars, being aware of the time that it would take to reach them at the rate at which a fast express train would travel; by the holy blue, thinking of the beauty of the figure rather than feeling the awe once inspired by its mysterious immensity. Our images as we use these terms are faint, if we recall the intensity with which the Greek appealed to the sun;¹ the invocation of the sun, moon, rivers, and fields, side by side with Zeus and Apollo, in the treaty between the Macedonians and the Carthaginians;² and the sincerity with which the Roman Jew bound himself, as often by the sun and earth and heavens, as by the temple and the angels.³ The Servian, in his formal oath, still says, "so help me sun." The tribesman of New Guinea prays that it may scorch him, or that a mountain may fall on him, if he is false to his word; and the Tungus brandishes a knife at the sun, saying: "Plunge sickness into my entrails like this knife, if I tell not the truth." The sun was the great life-giver, and once shared the worship of the Chinaman in common with Earth, the All-Mother.

"By the great clouds," and the "holy blue," may be a reminder of the fanciful shapes seen in the heavens by the primitive eye and the active imagination of childhood.⁴ Perhaps the latter derives something of its force from its associations as the home of the gods. The oaths by the "thunder," "lightning," and their grotesque variations, illustrate still further the personification of phenomena. Dr. Hall in his "Study of Fears"⁵ says, "How such phenomena at Sinai

¹ Iliad, IX, ll., 154, 327: XIX, 254.

² Polybius, VII, 9.

³ All the Year, XLI, 521.

⁴ Hall: Study of Fears; *American Journal of Psychology*, Vol. VIII, 2, p. 178.

⁵ Hall: Study of Fears; *American Journal of Psychology*, Vol. VIII, 2, p. 201-4.

almost created the religious and political consciousness of the plain-dwelling Hebrews, Renan has shown at length, while Kuhn's great work shows how many motives and story books of the mythology and folk lore of all the Aryan race are cast in the mould of this imagery." In North Germany, Donar was worshipped as a divinity; the Gallic tribes venerated Taranis; and with the Celtic tribes, the name of the thunder was Taran. Jupiter, the father-god of the Roman, was the thunderer. Norsemen saw in the thunderbolt a picture of angry Thor hurling his heavy hammer. Thus the execration "thunder strike you," or "hammer strike you," was an appeal to Thor to deal death to the accursed. In eastern Prussia, men of Lithuanian descent place the right hand on the back of the neck and ask Perkun to destroy them if they perjure when swearing. Many of these old fancies, beliefs, and superstitions are preserved in the names of rivers, mountains, and cities in Norway, Sweden, Germany and Bohemia. In the East, the Indian had his Indra and there is beauty in the Vedic address to him: "He smote Ahi; then he poured forth the waters. He divided the waters of the mountains Tvashtai forged for him the glorious bolt. May the axe (thunderbolt) appear with the light. May the red one blaze forth with splendor,"¹

"By the hurricane" keeps alive the days of wind and storm divinities. The Scythians swore by the winds, as the symbol of life, and the Greeks gave them sacrifice, especially when setting out upon a voyage. "Harry Cane" is an antiquated pronunciation of hurricane, incorrectly written.

9. *Forms Suggestive of Astrology.*

Somewhat like the forms of group 8, but having a more limited and personal meaning, are: By the stars of life; my stars or by my stars; bless my stars; and by the stars of Peter.

As oaths, they bind the taker by his destiny, a bond which he is powerless to break. As exclamations, they may be either a complaint at the iron hand of Fate, or an excuse for any unseemly act on the ground that it could not have been otherwise because of an unfavorable position of the planets at the hour of birth.

10. *Oaths in the Name of Classical Divinities.*

By Jupiter, Jove, the holy Jove, Jove and Mars; by Joe; by Zeus, thunder and Mars, Pluto, Jupiter Ammon, the god of love, the god of war, the great gods of war, all the gods; by the Furies, furiation.

Upon the nature and function of the gods named in this group, much has been written by students of mythology.

¹ Tylor: Primitive Culture, Vol. I, p. 265. (From Rig-Veda.)

These phrases have appealed to the fancy of classical scholars, and the method of their adoption seems so apparent that discussion is unnecessary.

"By Joe" is a modification of Jove, due to defective speech or hearing, and in "thunder and Mars" the idea of metonymy appears again.

11. *Oaths by Animals, Plants, and their Products.*

By beans, turnips, gum, tar; by the duck, goose, hen, hen-roost; by fish, codfish, the holy mackerel, the bones of the shad; by the holy cat, by the dog, by the cabbage; for the love of ham, tripe, shad, mustard; by the golden calf, the golden heifer, the bulls of Bashan.

It may seem difficult to see in these expressions anything that could ever have pertained to worship. They seem to be used as a kind of satire on profanity. But there may be a deeper meaning in them even now than this, and every one is related, at least generically, to something that was once held sacred. Primitive ideas of metempsychosis, the virtue of plant and root in folk-medicine, the wonderful curative properties ascribed to the ordure of animals and birds in ancient times, and the use of everything from buttercups to the skins of fishes, by the magician and the spell-binder, help to explain why they were so much esteemed. The *physostigma venosum* of Africa, prized as a remedy for diseases of the eye, tetanus, neuralgia, and general nervous affections and also as a means for detecting witches; the *nelumbium speciosum*, or sacred bean of the Egyptians and the Hindoos; and the fact that the cultivation of a plant gives one such an understanding of its life and habits that it reflects itself in his thoughts and speech, are a ground for "by beans" that makes it more than a jest. So of the "turnip" whose scraped pulp was once highly valued in neuralgia and whose leaf made a cooling dressing. It may have gained esteem because the *ranunculus bulbosus* was consecrated to St. Anthony and called "St. Anthony's turnip," although not a turnip at all. "By the cabbage," was an oath among the Ionians who are said to have prized it as an antidote for the effects of excessive drinking. There seems little reason for swearing by "codfish," and "holy mackerel," beyond the fisher-folk superstition that sees "luck" in a particular genus or in such species as come at a particularly favorable season. But the *malapterurus electricus* and the *oxyrhynch* of the Nile were sacred; the Philistines worshipped Dagon, foreshadowed, perhaps, in Babylon by Odakon;¹ the third person in the first triad of Chaldean divinities was Ea or Hoa (earth) the "Intelligent Fish, Lord of the great Deep."² Add to all this the

¹ Brit. and Internat. Cyclos.

² Keary: *The Dawn of History*, p. 193.

traditions of mermaids, marriages of men with fishes,¹ incidents like that in the myth of Jonah, and a legion of others the world over, and the part played by fishes in the racial romancings, philosophizings, and spiritual metamorphoses is no insignificant thing, although most frequently called up in a byword.

The hen, duck, and goose once had a special function in sacrifices. The Greeks sacrificed the cock to Æsculapius; the people of Touraine, to St. Christopher. There are also many legends that give this bird almost a sense of divination as a herald of the Saviour's birth.² "By the dog," brings to mind Anubis of Egypt; Sirius of the sky; the Ionian oath; that of Socrates to Polus in the *Gorgias*; the Eastern custom of shaving the head in mourning for the death of a dog;³ calling this animal around the couch of the dying to ward off evil spirits; the Arabians and the Seneca Indians sacrificing it to the sun; the belief of the Arctic Indians that their ancestors sprang from the skin of a dog; and the custom of the Norsemen of naming their dogs for their gods. Saxon and Polish hunters and herds-men had a similar custom, and Bohemians often gave national names to their pets. The "cat," in India, was associated with the moon divinities. In Egypt, it was sacred, and to wound one meant exile if not death. Henty, drawing from the pages of Sir J. G. Wilkinson, gives an interesting account of the relation of this animal to Egyptian life.⁴ In recent years, the mummified divinities of former days in the "Cat Cemeteries" at Bubastes have been turned to account as material for fertilizers.

In the Norse mythology,⁵ the cat was sacred to Freya, whose car is represented as drawn by kittens. Among the Scandinavians generally, the animal was supposed to possess magical powers. This accounts for the disfavor in which black cats were held. Because of their color they were thought to be attendants upon witches and in league with the devil. The names "old cat," "old black cat," and "old Scratch," or "Scratcher," are relics of this superstition. It is therefore possible that, according to the principle of antithesis, "by the holy cat" is an invocation of the devil. "By the golden calf," and "by the bulls of Bashan," represent the pride of a valley rich in all its resources, and the struggles of a people who had not learned to worship without a visible representation of their divinity. The boast of Bashan⁶ was little different from

¹ Rink: *Tales and Traditions of the Eskimo*, p. 159.

² *Hamlet*, I, i.

³ Emerson: *Indian Myths*, p. 405.

⁴ *The Cat of Bubastes*, p. 165.

⁵ Grimm: *Teut. Myth*, Stallybrass's Tr., Vol. I, 305; III, 669.

⁶ Ps. XXII, 12; Amos IV, 1; Is. II, 13; Ezek. XXXIX, 18.

that of a New England farmer over his Shorthorns or Holsteins. On the sacred side, there is in the oath a generic reminder of Hathor; the temple of the Sacred Ox at Tanjoré; Asshur of the Assyrians; Astarte of Canaan and Phœnicia, associated, perhaps, with Ashtoreth, whose worship caused troubles for Israel and lost Solomon his kingdom.

12. *Oaths by Figures for Infinite Time, Measure, and Universality.*

By time; by Heaven; by heavens and earth; by all the stars; by all the powers that be; by all created things; by all common things; by all the sands of the sea; by all that is good, bad, or indifferent; by fire and water; by all that is holy; sacred; human; dear; wonderful.

These forms represent the struggle after categories. They show an effort of the philosophical consciousness to get something final. Number is the thought apparent in the greater portion of them, and it suggests an interest almost Pythagorean. "By all that is wonderful," opens once more the world of mystery, while the oath by "fire and water" may have survived from the practice of the double ordeal, or have come to us as a reminder of the quest of Thales, Heraclitus, Xenophanes, and others, after the first principles of things.

13. *Oaths of Fancy: Alliterative, Rhythmical, Rhyming, and Natural Motor Forms.*

I'll be ding dong danged; I'll be spingle spangle spokeed; by the ripping roaring jumping Jerusalem; by hatchet heads and hammer handles; by Christopher Columbus John Halifax Gentleman; by the hokey flying Jiminy crying turkey chews tobacco; by Jupiter Guy sip and scissors hell and damnation ter blizzers; golly gosh darn deuce devil; darn darn double darn golly gosh and hang it; by the jumping Moses, Jerusalem, Jeremiah, Jehosaphat; by holy Moses jumping Josea; by the jumping Judy; jumping Josey; by jim tumble shoots; by Jack the giant killer's shawl strap; by the land of the Leal; by the laurel hill.

In this section the fanciful and humorous side of swearing is represented. If the metrical element which appears in some of these forms were more general, a wave theory of profanity would be suggested. These, and a few that will follow, are nearer to a natural form for expressing emotion than most of the forms which have preceded. They show a combination of consonants and a placing of accents; a breaking of long phrases by sectional pauses; an unconscious conformity to the established principles of alliteration; and, in certain cases, a kind of climacteric progression, all of which enable pitch, rate, inflection, force and abruptness to be adapted to the temperamental excitability of the individual and the intensity of the feeling state. These are adolescent phrases, full of evidence of sudden or cumulative fits of emotion and fondness

for force in action. They are partly the result of conditions consciously existing at the moment of utterance, and partly of impressions unconsciously stored up and waiting the command of passion.

Suppose that vowels are natural sounds, somewhat subjective in character, while consonants are the natural elements for interpreting these sounds to others, as Von Meyer¹ and De Vere² would indicate; assume further that, as Stoddart says,³ the shock of deep physical pain is guttural in expression, mental pain, softer and indicated by the resonants, while disgust and aversion bring out the labial and dental elements; if there be added something from Byrne⁴ on the sensations of consonantal utterance; something of the onomatopoeic idea of the origin of the forms of speech, partially developed by Plato, Leibnitz, and Bacon, strongly urged by Renan, Chavée, Egger, Farrar, Wedgwood, and Whitney, but opposed by Müller, Regnaud, Bréal, and Lefèvre; without drawing upon the more extravagant statements of any of these, it would only be necessary to look to Sayce⁵ for the force of analogy in language, and to Guest⁶ for some principles of the structure of rhythms, to provide a thorough explanation for the origin of the oaths in the groups of this section, according to psycho-physiological principles.

The formula beginning "Jupiter Guy" is extremely curious. It was the waste-pipe of passion of an old man who stood high in his church. It was learned and used in early life, and in moments when carried away by sudden anger, years after all other forms of oath had been laid aside, this formula proved insistent to the great regret of its user, who was sometimes annoyed by boys simply that they might hear him hurtle forth so novel a combination. It comprises an invocation of a heathen divinity, the name of the swearer, a memorial of a primitive ordeal, a reminder of the burning lake, and a sentence of execration upon the offender.

A few forms seem to partake of some of the characteristics of all the groups. On the whole, however, they appear most nearly allied to the one now being considered. These very common phrases are:

By jiminy, jiminy crackers, crickets, crimps, crinks, scissors, king, Crusoe; by Jim slicker, dickey; by jiggers; by golly nippers; by the boots; by my stars and garters, stars, garters, and blue ribbons, stars and stockin' garters; by the great horn spoon; Svengali, O my golly; O thumpin; by jinks; by jingo; by the living jingo; by jumbo; by

¹ The Organs of Speech.

² Comparative Philology.

³ Glossology.

⁴ Principles of the Structure of Language, Vol. I.

⁵ Principles of Comparative Philology.

⁶ History of English Rhythms.

ginger, gingerbread, guminy, gumstubble, cuss, the heavenly Dick, Judas Crosby, haystacks, tike, the ace of spades; by crotch, crotch hemlocks, scissors, holy scissors, the land of scissors, the holy smut, the holy satchel.

Many of these, aside from a peculiar synthesis of sound elements, seem to have been the result of the broken speech that always springs from quick excitement. That exclamations so produced should grow into oaths, is entirely possible. The process is only that of thinking aloud. A sudden thought arises from a new perception. Instantly the imperative "by" slips from the tongue, and the apperception is ejaculated as an afterthought. Suppose that one becomes suddenly aware of the proximity of the pulex penetrans and knows that it is to be dreaded; By—jiggers! expresses the entire situation. So of jiminy—crackers! crimps! scissors! My—stars and garters! Svengali, O my golly! and others.

"Slicker" is a comparative form of slick, which is a term applied to things done smoothly and easily or rapidly. Hotten says¹ that "dickey" is costermonger for high toned or swell. Another meaning is dull, stupid, foolish. Maitland² speaks of its use in the sense of smart, or cunning, in which case it is synonymous with devil. The consonantal elements of "Jim" belong to the same order as those in "damn," and a simple recession of vowels might make the word a veiled term for the latter. Its original use as an exclamation would be intensive. It would be lost, however, when the exclamatory phrase "Jim slicker" or "dickey" became an oath, unless it came into existence as suggested in the preceding paragraph. The origin of "by golly nippers" is probably like that of "by jiggers." There are, however, two possible sources for it. The first makes it an incorrect spelling of gallinipper, an insect in the South said to resemble a monstrous mosquito. Chamberlain says that in Canada the name is given to a "large reptilian insect living under stones and used as bait."³ On the other hand the expression may be a survival of the "bogie story." Icelandic children early learn of Nykk or Nippen, a kind of devil who seizes people and carries them off on a gray horse which dashes over a precipice with them.⁴ "By the boots," is similarly an incorrect spelling for butz. "Der butz," or "der butz kommt," makes the flesh of German children creep. In Switzerland the bootze which drags children away, is probably related to the pöpel, or pöpelmann, of Swabia.⁵ "My stars and garters" is thought to be traceable to the "Order of

¹ Slang Dictionary, p. 47. ² Americanisms, p. 35.

³ Notes Am. Dialect Soc., Vol. II, 1890, p. 49.

⁴ Henderson: Folk Lore of the Northern Countries, p. 272.

⁵ Grimm: Teut. Myth., Stallybrass's Tr., pp. 505-508.

the Garter." Its emblems would suggest the phrase, but the true origin is rather to be found in certain wedding customs anciently observed in Britain. Brand refers to these and cites authorities who describe them.¹

"By the great horn spoon," is probably changed from its original form like many of the other expressions. It is not mentioned in the slang dictionaries. It seems that an old custom in England might account for it. Horns were an emblem of a cuckold. The spoon denotes the beating that followed shrewishness and domestic infidelity. Laws against profane swearing were severe. Offences of the kind referred to were dealt with by the community, and sometimes processions were formed in which a rail was the conveyance for the central figure of dishonor. Brand² mentions a picture of a "Humorous Wedding Procession," in which a dummy wearing a huge pair of horns is in the van, while another figure with a ladle follows after with an air of great earnestness. The picture of "Skimington and her Husband," in "Divers Crabtree Lectures," has a similar ethical aspect. If one were living in the Seventeenth century, and were familiar with the spirit of the age, the sudden sight of one of these village processions, or of any of its emblems with indications that they were about to be used would make "By the Great——! Horns and Spoon!" a very natural expression for the emotions of the moment. Another possibility is that the phrase may have come from folk names and traditions of the devil. In Scotland, "Old Harnie," and in the United States, "Old Horns," "Horns and Tail," and the "Old Horned One," are polite figures for a much-worked name. There is also a proverb, "He who sups with the devil must have a long spoon." The implication of this saw is that the devil is thus equipped. The Great Horned's spoon would need little change to give the common oath.

"Thumpin" may be the doubtful adjective "thumping," large; or it may refer to the Scottish sprite Thrumpin, who was feared when the uncanny sounds that are common at the season of the full moon, are heard.

"When the moon is in the fu'
When the ellereid are chumpin,
When the Toweries hard are thumping,
When the bawkie bird he kisses the yird,
Then, then's the time for Thrumpin."³

"By jinks" has, without doubt, been kept alive in part by the song, "Captain Jenks," but it has an earlier origin. Far-

¹ Popular Antiquities, pp. 127-130.

² Popular Antiquities, pp. 181-196.

³ Henderson: Op. Cit., p. 262.

mer says¹ that it is a shortened form of jingoes or jingo. Maitland:² its source is "hi' jinks" a jollification. "To kick high jinks" is a well known phrase in New England. In the poems of James Whitcomb Riley, the form "'y jinks" occurs. This is nearest to the revelling cry, from which the oath probably comes, of any of the forms found in searching for the source of it. Among the Scots in former days when a company of men met in a jolly mood, each of the party was given a number corresponding to the spots on dice, a bank was made, a cup was filled, and that man was to drink whose number came up at the casting of the dice. One was selected to throw the dice and the point of the game turned on his shouting, "Hy Jinks," at the moment of casting them.³ From this, the source of "by jinks" is apparent. "By jingo" is said by some to have been derived from a phrase used in a song of the Jingo, or Tory party, in 1878. Gaye says⁴ that it is connected by some with Shingu, by others with St. Gingoulgh; Mackay,⁵ that it is an old Keltic oath from the root "dian" (prim. jian) vengeance, and "gaoth" (prim. go or gu) blast or breath. The "Book of Slang"⁶ derives it from jenco (jenco, gincoa) a Basque name for devil. Maitland⁷ refers both to Ingoldsbys Legends and to Oldham's "Satires of the Jesuits" (1679), and regards it as derived from St. Gingulphus. De Vere thinks it may have come from "gingko," the name of a sacred tree planted beside temples in China and Japan, and therefore a symbol of divinity.

In "by jumbo" there is more than a reference to the famous elephant of a few years ago. The Mandingoes have a bugbear or devil whose name is Mumbo Jumbo. He is invoked to settle family quarrels. Brand, who describes Jumbo from Park's "Travels in Africa," says that a habit is kept hanging upon a tree at the entrance to a town for him, and that his coming is announced by screams from the woods. When he arrives, offenders are tied to a post and scourged, while others howl in derision.

"Ginger" and "gingerbread" may be allied to jingo, or simply nonsensical forms. The "holy smut" is, perhaps, a variation of the "Old Black One," as the "Heavenly Dick" surely is. "Guminy" and "gumstubble" are akin to jiminy (355); "cuss," probably, is allied to cress;

¹ Slang and its Analogues, Vol. IV, p. 58.

² American Slang Dict., p. 140.

³ Brand: Popular Antiquities, Vol. II, p. 334.

⁴ Macmillan's Magazine, Vol. LX, p. 54.

⁵ Gentleman's Magazine, Vol. CCLVI, p. 506.

⁶ Chatto and Windus: Bk. of Slang, p. 136.

⁷ American Slang Dictionary, p. 155.

"crotch," like the words crook, crouch, and crosier, possibly to cross; or it may be a verbal preservation of an ancient ceremonial oath; "Judas Crosby" is quite likely to represent somebody's estimate of a local character whom the first part of the oath chanced to fit; "scissors" may allude to the ordeal of the shears, or to traditions going back to Atropos and the Fatal Sisters; "tike" may be either dog or devil. The name "little tike" is sometimes given by elderly people to children as a term of endearment. The meaning is "mischievous little dog." "Big Tike" is a name given by workmen to an overbearing boss.¹ In this sense it is perhaps a syncopation of Tycoon. "Holy satchel" suggests no association to the writer.

In several of the preceding sections, various names for the devil have come to view. That oaths which are yet to follow may be more readily traced, a few names gathered from the pages of Grimm² are given. These show the great hold of the idea of an evil personality upon the imagination of all races. "The devil is Jewish, Christian, Heathen, a false god, an elf, a giant, and a spectre all in one." In the Greek he is *διάβολος*; A. S., *deofol*; Icelandic, *dyöfull*; Dan., *dyövel*; O. G. *tieval*; Mod. G., *teufel*; It., *diavolo*; Sp., *diablo*; Fr., *diable*. The softened terms of the German are: *deichl*, *deigl*, *deiker*, *deuker*; the French, *deacre*; English, *divil*, *deevle*, *Satan*, the Old Gentleman, the Old Boy. Some of the epithets are derived from his nature: *Antiquus hostilis*, *odiosus*, *hatola*, *craftig fiund*, the evil one, *vålant* or *fålant* (an erring, deceiver). He is also *der Alte*, crooked, hateful. Some of his animal names are: black horse, he goat, *lupus vorax*, *hellehund*, *hellenwulf*, *hellewurm*, *letifer anguis*, *draco*, *vilde ravn*, the cuckoo, vulture, and *βαάλ μυια*, which gives new meaning to the slang phrase "get fly." Other names are: *Mirki*, *tenebrosus*, *hiuke-bein*, *helle-yager*, the dicer (lying in wait for gamblers) or *Schenzerlein*, *Malleus*, and in the *Beowulf*, *gastbona*, or soul-killer. *Scrat* or *schretel* is an elfish spirit defined by Grimm as "ein Geist von Helle." The study of the syllabi gives

14. Oaths in the Name of the Devil.

By the devil, Lucifer, the great Salamander, the mischief, the old demon, old evil one, tempter, father of lies, old driver, old toaster, old serpent, old white horse, old cat, old black sheep, the old poger, porgy, the old Harry, lord Harry, Jim Crow, and the "devil and Tom Walker." A few forms name the world over which he is supposed to preside; by hell, by the dash 1, fire and brimstone, blue blazes, holy horrors, hell and brimstone; by the scorches, *hallelujah*, *hail Columbia*, *hades* and *sheol*.

¹ Maitland: *Americanisms*.

² Op. Cit., pp. 988-1030.

These forms are so clear as metonymies that they may be passed without further notice, excepting "old Harry" which is less probably derived from the verb "harrie" than from "hairy," referring to the shaggy coat of the goat by which the devil was often represented in pictures. "The devil and Tom Walker" is said by Barrere and Leland¹ to have been derived from a story of a man who sold himself to the devil. The story was published in Boston in 1832.

15. *Denunciatory Oaths.*

Blame it, blast it, blast you, your buttons, picture, tintype, bang it, bust it, blow it, bother it, bother the luck of a Chinese laundryman, confound it, cuss it, curse it, dumb it, dumb the dumbfounded thing, damn it, da'n it, dang it, dem it, ding it, durn it, dom it, blank it, dash it, God damn it, God dom it, Godonit, goramit, damn your eyes, buttons, picture, devil jump it, devil burn it, gosh hang it, gosh dumb it, hang it, gol darn it, hang the bloody thing, fury smash it, dog gone it, bugs eat you, deuce take you, plague on it, 'od rot it, drat it, dod rot it, drat the luck, go to glory, —l, perdition, hades, Guinea, Halifax, Jericho, go shovel smoke, you be damned, go to the deuce, to the devil.

"Blast" and "blow" are said to be of military origin. The idea of violence that shall bruise or rend is prominent as it also is in "bang" and "bust" (burst). "Devil jump it" means seize it eagerly and vindictively. "Deuce" is for devil. It was given by the Normans to the Saxons in the form "deus" and is so preserved in English romances of the Fourteenth century. It comes from the same root as the word for God. "Dickens" is a synonym for devil.² "Plague take it," "drat it" (God rot it), and similar expressions are medieval forms that still find a use. They may be traced, however, to old prayers of execration, like those of the Iliad, or, in some cases, to superstitions, like those connected with ordeals in the class of the "water of truth." "Glory," is used for its antonym. Barrere and Leland ascribe "go to Jericho" to the days of Henry VIII. The monarch had a house in the Manor of Blackmere. It was called Jericho. Callers for the king at any time when he chanced to be dissipating were told that he had gone to Jericho.³ "Bugs eat you," may be a literal expression, but it is more probably a perversion of "butz" sometimes spelled buz or budde.⁴ "Halifax" and "Guinea" are to save a harsher term. In this country, the former was popular as a Revolutionary expression. It probably sprang from a proverb in the vagabond's litany of England. At Hull, va-

¹ Slang, Jargon, and Cant.

² Sharman: History of Swearing, p. 167.

³ Barrere and Leland: Slang, Jargon, and Cant.

⁴ Barrere and Leland: Slang, Jargon, and Cant, p. 496.

⁵ See II, 11, 13, p. 369.

grants were whipped and put in the stocks; at Halifax, for stealing, they were beheaded with an engine called a Maiden. It is easy to see how in other English towns, men might take pleasure in directing outcasts to these places, and since, from a theological view, one on the road to either was eventually bound for the third place, the proverb, "From Hell, Hull, and Halifax deliver me" was very natural. Hence the association of "Halifax" in denunciation.

16. *Self Deprecatory Oaths.*

I'll be blamed, banged, bamboozled, blest, blasted, burned, busted, damned, darned, dinged, danged, doggoned, to damnation, darnation, tarnation, timenation; dad fetched, dad binged, dad snatched, dod gasted; chewed up, cow kicked, cow switched, cussed, cursed; flogged, dol garned, gol darned, gil dinged to Guinea, hanged, hanged to Guinea, Joe dad swizzled, Joe ding swizzled, kissed to death, teetotally kicked, eternally switch-backed, jiggered, hornswoggled, redeemed, smeared, smashed, switched, swizzled, sniggered, twisted, razzle-dazzled, hornswoggled gol darned, ground up and smashed, whang-doodled, flusticated, flambergasted, eternally sizzled, diddledy dog-gone, I'll have the rickets.

All phrases of which the leading term has appeared in other sections will be passed over. "Bamboozled" has a meaning like the French, *passer des curettes*, *monter une gaffe*, *juiffer*, *pigeonner*, *être l'autre*, and the Italian *dar la stoffa*. It is to buncoe, gammon, blind the eyes, "pull wool over the eyes," or cheat in any sharp way. Farmer, mentioning Bouchier, Leland, and Wedgwood, says: "Philologists are all at sea concerning its origin. It may be of Cant or Gypsy lineage. Perhaps it is an imitation of the Italian *bambolare*, to blind the sight."¹

Maitland² says that "hornswoggle" is similar to bamboozle. With others, he associates it with "skullduggery," cheating or deceiving by wiles. It is probably a compound and requires little variation of "Horns," one of the epithets for the devil, and the verb "waggle," which, as a slang term, means to beat, overcome, get the mastery of, yield the slang form. To be "hornswoggled," then, would be to be cheated or ensnared as craftily as the devil could do it. "Darned" is a velvet finish for damned. "Dod," requires only a recession of the initial consonant to be roundly profane. "Dad fetched" means summoned before God; "dad snatched," taken without warning; "dod gasted," transfixed with terror; and "dad binged," struck in a heap. "Switched" and "swished" may mean the same as flogged, but in the vocabulary of railroad men, to

¹ Slang and its Analogues.

² Americanisms, p. 144.

be "switched" is to be married.¹ To be "swizzled" is to be drunk; "Jim swizzled," excessively so. "Dol garned" and "dog gone" are plain in meaning. Their form is like the "Medical Greek" of London medical students, who "poke a smipe" instead of smoking a pipe, and take a "stint of pout" for a pint of stout.² To be "switchbacked" is to make many windings without getting ahead. "Redeemed," in phrases of this kind, is exactly opposed to its usual meaning. "Jiggered" belongs to a later section. "Sniggered"³ is said to be allied to jiggered, but no one explains "razzle dazzled" or "whangdoodled." Hotten⁴ makes "flusticated" a misunderstood form of obfuscated, a word for the state of intoxication. He thinks "flambergasted" a corruption of flabbergasted, to be overcome with confusion.

17. *Exclamations most of which once contained an Invocation, Oath, or Prayer.*

Mercy, merciful goodness, merciful heavens, bless us, God bless us, O goodness, goodness Godness, good gad, good gid, good gosh, mon Dieu, mein Gott, O dear, dear me, O Lord, good Lord, goody Lordy, O hell, heaven, Halifax, O the deuce, devil, divil, nevil (a girl's word), merciful heavens, good Lord deliver us, saints preserve us, saints defend us, heaven help us, my gracious, O gracious, good gracious, bless me, bless us, bless my soul, bless your heart, bless your gizzard, bless and save us, O save us, mercy on us, land o' massy (mercy), Lor' bless you, laws (Lord) 'a mercy, O mighty, my land, my patience, my conscience, great guns and heavy shooting, great Cæsar, great Scott, mowly hoses, heavens to Betsey, heavens to Betsey and eight hands around, Petration, forevermore, me O my, meo mihi me, my senses, O fiddle, fiddlesticks, O papa, mamma, Maud, Mike, Peter, Harry, Isaac, ginger blue, zounds, riggerty giggerty, lumbolga, lawk, lawzy, phaw, humph.

Excepting the last dozen and a half, which are simple exclamations, there is in nearly all these examples an invocation of the power of the Invisible, either as pan-spiritual, as concealed force, or as God. In the terms "mercy," "gracious," "heavens," "bless us," and others, there is an address to something. If it were not so, the act of utterance in its inception would have been purposeless. The something to which the feelings flow with the changing moments, is a something worshipped in the moments of certainty and trust and rest. Expand these abridged terms, and "mercy" becomes "Have mercy on me;" "gracious," "Be gracious unto us," and "heavens," an appeal to the same personality through metonymy. In "O dear" is the "O dieu" of another tongue; in

¹ Am. Jour. Folk Lore, p. 305.

² Maitland: Op. Cit., p. 176.

³ Chatto and Windus: Dict. Slang.

⁴ Book of Slang, p. 64.

"dear me," the "Dio mio" of the Italian. "Good gosh" is a contracted form of the "good God's flesh." Like "great Cæsar," great Scott" may refer to a famous general, as De Vere says; but the origin is probably farther back than the life of the man to whose name he traces it. Mackay derives it from God.¹ It might be formed from some phrase like "great is God," but the most probable derivation is an outgrowth of an old legal practice of collecting levies from royal subjects. This tax was called a "scot." The term came to be used for anything raised by contribution. Its etymology makes it mean anything "shot" or "thrown." "Great Scot" would be a fitting sarcasm for a disappointing tax or collection and, fervently uttered, would be sure to get a footing among exclamations. "To go scot-free" is a familiar phrase that tends to support such a derivation. "Heavens to Betsey" is an entirely obscure, though very common phrase. "Forevermore," seems like the clinging ideas of insanity. Is it the result of the audible thinking of some one touched by the idea of the irrevocable nature of action and the unalterable laws of cause and effect? "Lumbolga" may be some one's mistaken "lumbago," perpetuated because such blunders are always ludicrous. "Sockdolager" for doxology, and "shicoonery" for chicanery, are illustrations in the same class. "Zounds" is for "His wounds."

A few other exclamatory phrases convey the idea both of surprise and of incredulity. The origin of each is apparent.

Great Scott and little fishes; great Scott and little fish-hooks; great Scott and loaves of bread; ye gods and loaves of bread; great gods and little fishes; great guns and little fishes; great guns and little pistols; Jonah and the whale; great Cæsar's gunboats; and Moses in the bulrushes.

18. *Oaths by Suggestion.*

By G—; by the Gracious —; by the Great —; by the —; by —; by the dash !; blank it; dash it; by the Holy; so help me — so help me Great —.

These all represent the "reticentia" of Cicero; the "aposiopesis" of the Greek rhetorician. They, like all softened forms, have a more marked effect upon a listener and are more likely to be imitated than the rougher oaths. Having occurred in other lists they do not enter into the total number of forms as a separate class.

In various groups certain forms have been passed over for later treatment. 31 expressions have been kept alive, perhaps by tropical sex names and phallic symbolism. Like Turkish blasphemy, our profanity and our slang have shadowy chapters. The expressions which follow belong to one of those chapters :

¹ Blackwood's Magazine, Vol. CXLIII, p. 696.

By the dog, the holy cat, the cabbage, the cuckoo, the great clouds, beeswax, the holy mackerel, codfish, the ace of spades, the scabbard of my sword, heaven, hell, the world of shades, Job, St. Patrick, gewhittaker and the North Pole, by the holy altar, all souls, all the saints, the mother of all the saints, jucks, the love of the church, fiddle, fiddlesticks, I'll bet a cooky, for the love of fish, tripe, ham, I'll be dinged, I'll be jiggered.

This group has been isolated after a careful comparison with Farmer's lists. It is a mystery how such forms get into good society. It is safe to say that their origin and associations are unknown and unthought of. Perhaps it is not always wise, even for the sake of proficiency in current slang, to adopt, without examination, terms that a respectable lexicographer would hardly define for general reference.

III. THE ATTITUDE OF SOCIETY TOWARD PROFANITY.

This form of swearing was once fashionable. Count de Noé, Dean Ramsay, and Sarah of Marlborough were famous swearers. Elizabeth did not always bridle her tongue, and Shakespeare reflects the sentiment of the time nicely in "He writes brave verses, speaks brave words, swears brave oaths" (*As You Like It*, III, 1.); and "God mend me and by all pretty oaths that are not dangerous," (*Act IV*, 1). Chesterfield also discussed the problem and made nice distinctions as to what a gentleman might use with propriety.

But this does not represent the feeling of the ages. Laws against swearing have stood on the statute books ever since courts were organized. Justinian put to death those who swore by the limbs of God.¹ Donald VI and Kenneth II cut out the tongues of the profane. Philip II drowned swearers in the Seine. The Council of Constantinople excommunicated such as "swore heathen oaths." Henry I, William and Mary, Mary Queen of the Scots, and George II of England had statutes forbidding it. With the first, the penalty was 40 shillings for a duke, 20 for a baron, 10 for a squire, and 3 for a yeoman. Boys were whipped for the offense. In 1645 the Scotch Parliament made cursing a parent punishable with death. In 1650 it disqualified swearers from being officers in the army. Scotch Presbyterians of the Sixteenth century kept "palmer's" for the offender, or provided boxes not unlike our penny banks for collecting fines. Both these were looked after by the head of each household. The Blue Laws of Connecticut did not forget to provide against profanity. The Puritans had a provision that actors should not swear on the stage.² State laws provide penalties for it. In Pennsylvania and Indiana, any

¹ Sharman: *Hist. of Swearing*, p. 31. (From Mezeray.)

² Sharman: *Op. Cit.*, p. 125.

words importing an imprecation of future, divine vengeance, may constitute profane cursing. Public swearing generally, is indictable as a nuisance. It need not be continued longer than five minutes to give a case, and, in New York and Connecticut, drunkenness does not constitute a defense.

Three hundred and sixty-eight young people tried to tell why they use the common forms of ejaculation noted in the foregoing pages: 3, "must" swear; 7, have no reason; 30, do it "to be witty or smart;" 32, to "give vent to their feelings;" 32, "from pure imitation;" 68, to "seem emphatic;" 177, because "it is a habit and they do not think;" and 19 give "carelessness" as the reason.

Of 504 who gave an opinion as to the effect of the common use of such expressions upon the instinct for truth, 22 regard a trivial oath as amusing; 28, as without effect upon truth; 23, say that one may be more readily believed when he swears to a thing; 202, that swearing is positively against truthfulness; and 229, that it is an arch enemy to a broad vocabulary and exact expression.

IV. THE FUNCTION AND SIGNIFICANCE OF SWEARING AND EXCLAMATION.

A careful study of the 700 different oath-forms here presented results in placing the approximate origin of 9 per cent. of them in animism or feeling for objects in nature; 15 per cent. in exclamations, many of which have sprung from old folk-customs; 8 per cent. in psycho-physiological impulses naturally expressed; 6 per cent. in legal and business terms; 2 per cent. in the instinct for humor; and 60 per cent. in the evolution of the idea of religious dualism. One-third of the last group are denunciatory.

In these expressions are traces of the spirit of the past. They reveal, as the lesson of the ages, the fact that the God-idea is the most imperative that stirs the hearts of men.

In the evolution of society, this idea was formulated into an objective bond—the oath. This bond was designed for the protection and advancement of the race. It gave individual instinct a more ultimate purpose than expression for its own sake. In order to attain that purpose, inhibition of the personal impulse became necessary. But the drafting away of feeling-energy into more definitely purposive channels did not obliterate the old lines of reaction. Therefore swearing became an automatism.

There are persons who declare that one feels better if, after pounding his fingers or sitting on a tack, he rips out an oath. This may be true of the individual who makes the statement, but it is not necessarily true as a principle. Under any given

set of conditions, a man feels better for going to the usual limit of his actions under similar conditions. This, however, is because habit is the line of least resistance. It does not follow that the customary action is more natural or more beneficial than a different course in another direction, or even than the inhibition of all action.

Some of the contributors to the study swear "to relieve their feelings." If the Lange-James theory of emotion be true, instead of relieving the feelings and saving violence, oaths may be pitch upon the flames of passion, the preparation that makes the blow possible. The more cautious animals work up to combat in a vocal way, and schoolboys rarely come to blows until after the swearing stage is well begun. It is at least as reasonable that one grows more angry because he swears, as that he swears because he is angry.

There is also a feeling among physicians that much bodily and mental ill-being results from a state of emotional excitement due to extravagant expression. In an address on "Emotional Prodigality," C. Fayette Taylor, M.D., sets this forth with clearness and force. If it be true that growth is retarded by feeling thus aroused, and that sthenic conditions are replaced by neurasthenic, in consequence of giving expression to such feeling, there can be little economy in swearing, for either physical or psychical well being.

The general results of this study of common oaths and exclamations give no assurance of anything useful in profanity. It is a kind of slag left over after the vital element of the oath has been utilized by civil law. It is a menace to the sacredness of the oath in court. Severe penalties on the statute books discountenance it. The consensus of past opinion is against it. Intelligent teachers and students pronounce it hostile to truth and unfavorable to the highest culture in language. It does violence to the highest canons and codes which society has fashioned as a guide for human conduct. If it be objected that these standards are artificial, it must be remembered that this is true of everything called human naturalness. Every step forward has resulted from the elimination of acts and impulses that the race consciousness has pronounced undesirable, and the sum total of human progress has grown out of an inhibition in many lines, as complete as that which would result from literally following the injunction, "Swear" (idly) "not at all."

I wish to acknowledge the great assistance of President Hall and the lecturers of the Departments of Psychology, Pedagogy, and Anthropology, in preparing this paper. The work has been made much easier by the courteous aid of Mr. Wilson, the University Librarian, the assistants of the Worcester Public Library, and Miss Mason, of the

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M. H. S.

TRUANCY AS RELATED TO THE MIGRATING INSTINCT.

By LINUS W. KLINE, Clark University.

CHAPTER I.

INTRODUCTORY.

Aside from psychological interests truancy has some very important pedagogical and sociological aspects. Attendance and attention of the first order are probably the most serious factors to be successfully met by the practical teacher. It is becoming recognized more and more that the realization of these two coveted prizes of practical pedagogy depend primarily on a physical and sociological basis.

Morrison¹ says: "That biological conditions are directly and indirectly important factors in determining the course of human action." Richardson,² in speaking of felicity (well being) as a physiological quality, says: "Of the two living natures with which man is endowed and which distinguishes him from the lower creatures—the pure animal and the pure intellectual natures—felicity belongs to the animal nature. . . . The center of the emotions of felicity (well being) is in the vital nervous system, in the great ganglia of the sympathetics lying . . . in the cavities of the body itself, near the stomach and the heart."

Dawson³ says: "The first elements to be noticed in the early surroundings of these delinquent children are the poverty and improvidence of the parents." These citations indicate the general considerations that have influenced the present investigation—the *biological, the physical and the sociological*.

BIOLOGICAL.

Differentiation in psychic qualities are believed more and more to take place simultaneously with differentiation in form and activities of the animal. A study of the forces which cause the latter may aid in the interpretation of the former process. The chief of these forces are recognized to be food, temperature, and sociological.

Probably the most vital connection between food and organic life is seen in the influence that nutrition has in determining the sex of the animal. Herr Yung⁴ has shown that, if tadpoles be fed beef, the proportion of female to male will be raised from 46 male and 54 female (the proportions existing in nature) to the proportion of male 22 to female 78; if they are fed on fish the proportion is 19 male and 81 female, and if they are given in abundance the sciatic muscle of frogs the predisposition to the female is 92 as against 8 for the male.

Moleschott⁵ begins the first sentence in his work on Materials for Nutrition by saying: "That the wild cat became a house cat through the influence of food."

¹ Morrison: Juvenile Crime.

² Richardson: Common Health, pp. 290-92.

³ Dawson: A Study in Youthful Degeneracy. PEDAGOGICAL SEMINARY, Vol. IV, No. 2.

⁴ Yung Arch. des Sci. Phys. et Nat., Vol. XIV, pp. 502-22, 1885.

⁵ Moleschott: Lehre der Nahrungsmittel.

The tamer of wild animals knows the secret power of food in allaying the ferocity of his beasts. It is said that the peculiar quality of tone of certain song birds depends on the kind of food given them. Esau lost his birthright through the hunger of his father. Buckle¹ calls attention to statistics, showing that the percentages of marriages in England fluctuate with the price of corn. But food material is only one factor essential to the animal's well being. Temperature imposes certain conditions on the effectiveness of food. Kerner,² describing the effect of heat on plant growth, says: "Without this there is no growth. It has been shown that the decrease of young herbaceous plants in two successive days had sunk, in consequence of a sudden storm and visitation of cold, from 8cm to $\frac{1}{4}$ cm. There is no doubt that such a decrease of growth stands in causal connection with the fall of temperature, and also that quick growth is to be laid to the account of a rapid increase of heat." In fact, growth is a consumption of free heat. Light is essential in forming constructive material, but heat is essential to put it into *form*, to *organize* it.

To prevent the radiation of heat by night that they have gained during the day, many flower buds are pendulous, bell-shaped and tubular, or leaves become arched in the shape of a dome, cap or umbrella, above the stamens or pistils, in which case inner portions of such flowers are hidden as in a niche. In these hidden nooks they are comparatively well protected against loss of heat, and at least no radiation of warmth towards the night sky proceeds from the anthers and stigmas. The air in the pendulous bell flower is 1 to 2 degrees warmer in the morning, before sunrise, than the surrounding air. In many instances the flower buds and young flowers only assume an inverted position periodically, *i. e.*, only when a cold night is to be expected. The falling of the umbel of the carrot at night, and assuming an erect position at the rising of the morning sun, is an example of the movements of plants in obedience to temperature.

Stahl³ has shown that myxomycetes when placed on a piece of filter paper, one end of which was immersed in a glass beaker of water of 7°C, and the other end in a beaker of water of 30°C, that they at once migrated to the beaker of the higher temperature.

Mendelssohn⁴ has found that the unicellular organism (paramaecia) is positive thermotropic for certain temperatures and negative for others. He discovered their optimum to be from 24°C-28°C. He shows that if they be kept in a temperature from 36°-38°C from 4-6 hours, and then placed in a rectangular vessel whose end temperatures are 24°C-36°C respectively, they will occupy a position corresponding to 30°C-32°C. If the temperature be *suddenly* raised, they reach their optimum at 24°C, but if it be raised slowly, their optimum can be raised to 32°C. Thus these unicellular organisms can be acclimated to different temperatures if given time. The inner molecular and chemical changes very probably need time in which to alter the rate and quality of their activities to suit the new condition imposed upon the cell. Can it be demonstrated that a disturbance, or an alteration in the equilibrium and constancy of external forces affecting the organism is accompanied or stands in causal connection with physico-chemical changes of the organism. Do these external changes alter the metabolic processes, and if so, what is the significance of the alteration.

The writer addressed these propositions to tadpoles. It was found that they are negative thermotropic for temperatures above 24° and

¹ Buckle: History of Civilization, Vol. I, Pt. 2.

² Kerner. Anton Von Marilaun: Nat. His. of Plants. Trans. by Oliver.

³ Botanisch, Zeitung, 1884.

⁴ Pfüger: Archiv für die ges. Phys. Bd. 60, 1895.

positive at temperatures below 18°C, and that their optimum was between 19°C and 23°C. Having determined the temperature in which the tadpole appears satisfied and is at complete harmony with its environment, so far as temperature is concerned, the next step was to ascertain the quantitative difference, if any, between the metabolism of tadpoles at their optimum temperature and at temperatures above and below the optimum. As far back as 1795, Lavoiser showed that the absorption of oxygen and the production of carbon dioxide were among the chief processes of life. Later investigators, as Regnault¹ and Reiset in 1849, Colosanti² 1877, and Chapman³ and Burbaker in 1891, have found an intimate relationship between the ingress of the one and the egress of the other.

Colosanti, for instance, found that in the guinea-pig the relation by weight between the discharge of carbon dioxide and the absorption of oxygen is always the same. The guinea-pigs were exposed to temperatures ranging all the way from 5.5°C to 22°C, and in every case the quantitative relationship between the two was constant. This relationship between the weight of the oxygen absorbed and the weight of the oxygen in the carbon dioxide produced is termed the respiratory quotient. Richet,⁴ Grüber⁵ and others show, however, that the quotient is not constant, but varies to some extent on account of food, external and internal temperature, age, time of day, muscular activity and the species, being higher in warm blooded than in cold; but these variations are not serious enough to prevent an inference as to the intensity of the one when the other is given or known with reference to a given species, in which case the quotient does not vary over 5 to 10 in a 100. In general, then, by knowing the respiratory quotient for any species, and one factor, the other is readily determined.

Physiology teaches that oxygen is used in breaking up the complex food received by an organism into simpler elements, and thus prepares it to form new and more highly complex combinations. In short, oxygen is concerned with the integrating, the anabolic process. On the other hand carbon dioxide is one of the several disintegrating or katabolic products. These two constituents are not only always present in metabolic processes, but are of such prime importance to the process that a quantitative determination of either or both is a fair measure of metabolism itself. In the present investigation the amount of carbon dioxide produced under given conditions is selected as that measure. It is not the purpose to determine the absolute amount of metabolism, such a task is beyond present laboratory methods. The object here is to estimate the relative amount at different temperatures and regard these quantities as merely indices to what the absolute quantity may be at a given temperature.⁶

The results of the experiment show that a maximum amount of carbon dioxide is produced at the optimum temperature, and that the amounts decrease for temperatures above and below the optimum, and further that the fall is much more rapid toward the lower temperatures than toward the higher ones. If, then, the production of CO₂ is

¹ Regnault et Reiset: *Recherches chimiques sur la respiration des Animaux des diverses classes*. *Annales de Chimie et Physique*, pp. 299 et seq., 3me Ser., Tome XXVI, 1849.

² Colosanti: *Ueber den Einfluss der umgebenden Temperatur auf den Stoffwechsel der Warmblüttes*; *Pflüg arch.* Vol XIV, pp. 92, 469, 1877.

³ Chapman and Burbaker: *Proc. Acad. Nat. Sci. Phil.* Jan., 1891.

⁴ Richet: *Comptes Rendus*, Vol. CVI, 1888, pp. 496-498, also *Archiv. de Phys. Normale et Path.* Vol. XXII, pp. 17-30.

⁵ Grüber: *Zeitschrift f. Biologie*, Vol. XXVIII, 1891, pp. 466-91.

⁶ Methods, the many corrections, and precautions, etc., incident to such an investigation are here omitted, since they are quite apart from the main article. They are inserted in a paper on "Migrations vs. Love of Home."

a fair index of the amount of metabolism in an organism, the conclusion of the present experiment is that *for this species* of embryos maximum metabolism is coincident and very probably a function of optimum temperature.

The next question of importance here, is what effect has maximum metabolism on the tadpole as a whole. Is well-being in this case a function of rapid metabolism? Does the tadpole select its particular temperature in obedience to some inherent or attractive force that the water may have at 19°-23°C? Are they drawn to it as iron filings to a magnet, a moth to a bright light, or a horse to a hot fire? Or may it not be that the forces of evolution have evolved in this creature a molecular and chemical constitution of such a pitch, vibration or rhythm that it requires just the stimulus offered by this particular temperature to set the molecular and chemical activities agoing throughout the organism at that rate or pitch which natural selection has determined?

It is generally conceded that the conditions that produce growth are conducive to well-being. In fact we are accustomed to think that well-being conditions growth. If, then, the optimum temperature of the tadpole is one of well-being rather than a kind of an inherent spell-bound attractive force, the growth at that temperature ought to exceed that of temperatures above and below the optimum. This likewise was put to the test by an experiment. It was found that 10 tadpoles enjoying their optimum temperature kept constant, gained in two months 11.2 gr. in weight and .77 cm. in length, while 10 tadpoles subjected to a temperature 6°-8°C lower than the optimum, gained in the same time with same food, same shape and size of vessel, etc., 8.5 gr. in weight and .6 cm. in length.

Summing up the relations of temperature to organic life, as shown by these experiments, it is found, first, that plants alter their structure and go through periodic movements that they may keep a more constant temperature; second, that the unicellular organism, paramaecia, is both positive and negative thermotropic, and that they have an optimum temperature; third, that tadpoles are both positive and negative thermotropic and that they have an optimum between 19°C-23°C; and fourth, that maximum metabolism and the growth of tadpoles are functions of their optimum temperature.

What bearing have these facts on truancy? Do they not justify the assumption that every creature has been keyed, as it were, to a certain rate or pitch of metabolism, which rate has been fixed by natural selection and that its maintenance is essential to the creatures' well-being? It is the animals' power of nutrition. This rate of metabolism demands certain external stimuli in the way of food, temperature, light, etc.

An excess or a denial of an adequate amount of the stimuli is a direct cause of molecular and chemical changes which destroys the well-being of the organism. To regain the condition and sense of well being, the metabolic processes must either be keyed to a different rate, one in harmony with the new condition, or else it must seek an environment in which stimulus and food supply are proportional to the normal rate of the metabolism. According to the theories of differentiation both have been employed ever since life began, the former laying the foundations of morphology and the latter of more complex physiological processes. But of the two, *i. e.*, change of *structure* or *position*, the latter is more often the cheaper. Movement, therefore, is a universal mode, excepting parasitic life, by which organisms restore the stimulus essential to their well-being, be it temperature, food, light, pressure, or what not.

It is the universal mode by which organisms relieve the manifold

strains and stresses that are created by the forces that continually affect all life.

Starting with this general biological conception as a sort of background, the truant problem is further approached through child study, which is the subject of the next chapter.

CHAPTER II.

CHILD STUDY.

Runaways.

The data for this study consisted of answers given to rubrics I and III of Syllabus III, 1896-97. Migrations, Tramps, Truancy, Running Away, etc., vs. Love of Home.

Q. I. Consider whether you know any small child with a propensity to run away; and if so, describe the circumstances—why, when, where it went, whether alone, and planned or impulsively, and all the details and incidents of each case; its adventures, how it was found, whether deterred later by its experiences, at what age this disposition appeared and when it ceased, and why.

Q. III. Describe any case of truancy from school or church, its motives, traits of the child, mode of concealment.

In each case specify each of the following points: 1, age; 2, sex; 3, nationality; 4, occupation of parents; 5, are one or both living? 6, do they own their homes? 7, are their food and clothes good? 8, plays; 9, books; 10, pin-money; 11, affections; 12, has the child any physical defects? 13, is it oldest, youngest, or only child? 14, is it quick-tempered? 15, sensitive; 16, demonstrative; 17, laugh and cry easily; 18, cheerful; 19, active; 20, generous; 21, fond of play-mates or reticent and inclined to be alone; 22, does it seek to govern others and does it obey readily? 23, love or shun crowds; 24, or dark; 25, animals; 26, deep water; 27, out-of-door life, fondness for woods, fields, etc.; 28, does it love music; does it dance? 29, a good color sense; 30, is it careless or tidy and dressy? 31, has it had pets, is it good to animals? 32, careful of property; 33, and of others' rights; 34, made a collection of things; 35, is it persistent in carrying out tasks? 36, is it inquisitive and talkative? 37, were there ample opportunities for taking exercise, were games and sports encouraged? 38, was there plenty of physical and manual labor at home? 39, must there have been long hours of sedentary work at home and in school? 40, *always specify the season of the year of every incident, if possible*; 41, was there immoderate love of sight-seeing, being out evenings, camping out, hunting, excursions, picnics, etc.

Kindly send your answers to

G. STANLEY HALL,
or L. W. KLINE.

CLARK UNIVERSITY,
Worcester, Mass., Oct. 26th, 1896.

Section I. 250 returns were received in answer to rubric I. Twenty-five per cent. of the cases are females. Eighty-five per cent. are Americans, the rest are Irish, French, Scotch, German, etc.

Homes. By far the majority of their parents belong to the comfortable living class, though running away occurs alike amidst extreme poverty and much affluence.

Physical Defects. Sixteen per cent. were physically defective—mostly in speech, spine and hip trouble.

Oldest, Youngest, and Only Child. Seventy-nine per cent. belong to the oldest, youngest, or only child group. Of the 21% not in this

group, 11% are either the only boy or girl in a large family numbering from 8 to 10 children; so that only 10% of the cases escape suspicion from their numerical relation in the family. This subject will receive some consideration in the analysis of the next rubric.

Disposition. They are usually reported as demonstrative, sociable, loving crowds and outdoor life, very active, restless, impatient of restraint, and having but few fears. They are very careless and untidy in dress. The majority have made no collection of toys, playthings and the like, common to children. They are destructive of property, some take a peculiar delight in destroying anything that falls within their power. These are likewise cruel to animals.

Seventy-six per cent. are persistent in whatever task they undertake. Of those not persistent 50% were never cured of running away. They did things by fits and starts, would work real hard a few days and loaf as many weeks. They were sent to reform schools, some to prison, others became professional tramps. This class, *i. e.*, those who do work by fits and jerks, forms 20% of the whole number that were not cured by home management.

Havelock Ellis,¹ referring to the paternal ancestor of the famous Jukes family, says: "He is described as living the life of a backwoodsman, a hunter and fisher, a hard drinker, jolly and companionable, averse to steady toil, working by fits and starts. This intermittent work is characteristic of that primitive mode of life led among savages by the men always, if not by the women."

Time of Running Away. Thirty-eight per cent. of the 250 cases ran away during the summer; 33% at all seasons; 20% in the spring; 4% in the fall, and 1% in the winter.

Causes. The immediate causes of running away are probably best made out from the cases themselves, examples of which are given below in three groups: first, cases of children from 1 to 3-4 years; second, cases of children from 4 to 7 years inclusive; and third, cases from 8 to 12 years inclusive.

I. Group of Runaways from 1 to 3-4 year of age. (50 cases.)

1. A teacher of long experience, says: "Think I never knew a child that did not love to run away soon after it could walk with ease. Cause, I have observed, seemed impulse. A little girl of four, next door to me, runs away whenever left unguarded in the yard, and even tries to outrun and escape whoever is watching her. My own nephew would dash off into the street when he could but just run alone. I think spanking, tethering with a rope about his waist, and confining in a pen in the yard, finally broke him of it. He has not done it since he was three years old."

2. M., 1 yr. 6 mos. Had played quite a long time in the yard, finally he started off into the road. Mother says: "I saw that he was off in the mud and started for him. Seeing me coming, he commenced running as fast as his little feet could carry him, splashing through the little puddle of water standing in the grass."

3. M., 1 yr. 8 mos. Was left playing in the yard while the mother was dressing to go calling. He knew that she was about to go. She says: "When I came into the hall to see him again, he was going just as hard as he could walk to town—thought he'd go too—I started after him and he, seeing me, commenced running, so I commenced running, but he turned the corner and had gotten nearly to the blacksmith shop before I caught him. He was highly amused at the fun, and screamed with laughter when I finally took him up in my arms."

4. M., 3. Frequently left in search of his papa, when the gate was

¹ Havelock Ellis: The Criminal, p. 101.



closed he would crawl under the fence. Took a pail and went down Broad Street where parents get milk. Child said: "I fought I needed some milk, mamma. I was going to put it in dat pitcher and not drink it."

5. F., 4. Had never ran away before. One day in the spring time the child was out playing. An older sister of the child had just departed for a brief visit to a friend's house, not far away. It was supposed that the child had not seen the sister going, but the girl had scarcely arrived at her friend's house, when looking out, saw the child standing outside.

6. F., 3. Ran away whenever the opportunity offered. She never seemed to have laid out any plans for running away, but seemed to act apparently upon the impulse. One time she ran away for two or three blocks, and when found was making mud pies, in which occupation she was deeply interested and very angry when taken home. Again she ran away and found a large doll on a neighbor's porch. This she carried home to play with.

7. *Aimless.* M., 3½. No playmates. Yard gate tied to keep him in. His desire to get out of the yard was so strong that he persuaded the passers-by to untie the rope. The gate was opened for him and out he went. On he went alone for a great distance. Was found in a blackberry patch, tired and feet scratched. Realized himself lost and began to cry.

8. *Following.* F., 3. Followed secretly after her father, who had gone to the pasture for horses. She lost sight of him; continued her journey until she had gone about two miles from home.

8½. M., 2. Had no playmates. Too small to be allowed in the streets with the boys. Stranger called at the house. When he left, the boy slipped through the gate and followed him until he saw some little boys with whom he immediately made acquaintance.

9. *Beggars.* M., 3½. Two twins ran away on a hot day. Stopped at a store. Begged that each might have a parasol. Went on further to a merry-go-round, hesitated, then accosted the manager for a ride.

10. *Water.* M., 2. Always went alone. First trips were to a duck pond.

10½. M., 4. Ran away during the summer. Two years old when he began. Would go to the beach and neighbors' houses.

10¾. M., 3. Never went any great distance. He liked very much to go down to the water and generally could be found there when missed.

11. *Hunting.* M., 18 mos. Eluded those who watched him, and found half an hour afterwards in the sage brush in eager but unsuccessful pursuit of lizards and horned toads.

11½. M., 4. Heard frogs sing. Asked mother what they were and desired to go at once to see them. Was told that they would jump in the water and could not be seen. A few days later M and a younger brother, 13 mos., disappeared suddenly. After a long search they were seen coming towards home through a field adjacent to the frog pond.

12. *Impulse to go.* M., 3½. Walked a mile and a half to the station, boarded a train and got off at Newark, which is about 30 minutes' ride from his home. His father works in it,—probably the reason for his going, although I should think he was too little to think about going there. Went alone. Did not prepare, not even wear a hat. Found in a very dirty condition. Was taken to his father's office by a friend. The child, however, was perfectly contented, not seeming to care at all about what had happened.

12½. M., 3. Began to run away when only 3. Parents lived in the country about 1 mile from any house. Always went alone and would

never have anything on his head. When found would be talking to himself or playing with sticks and stones by the roadside. Would go away three or four times in a day, no matter how much he was scolded or punished for it. He continued to do this until he was about nine.

13. *To See New Things.* M., 3 yrs. 4 mos. Has shown a tendency to wander since he was 14 months old. Mamma would wrap him up and put him in the yard to play; and when people would come for the doctor, M would start for the gate and slip out. Would get down the street some distance before mother would miss him. When she would start for him he would laugh and skip on. He runs away to see everything that comes along, no matter what. He would have to stop and make friends. He continues to roam and I believe always will; even though he receives severe punishment he will run away. It has never ceased, but grows stronger.

14. *To the Fields.* F., 2. Great propensity to run away. Every time it found the gate open or a hole under the fence, it would make its escape and be gone. One morning mother awoke, found child gone. Being alarmed, she immediately went down stairs and searched. Not finding it, she awoke the sleepers and a general search was made. The child was found in the fields plucking flowers and singing to itself. It seemed to be in perfect content and happiness, and I know did not plan the performance, but waking up, as it did, before the rest of the family, and finding the door open walked out, bare-headed and bare-footed, nothing on but a night-gown.

15. *Love of Change.* M., 21. Related by his sister. "He began to run away when about 18 months old. One member of the family was always detailed to watch his little excursions. Was very frequently picked out of danger a mile or two from the house. Strangers were frequently finding him and setting him over in other people's yards. One day he ran away naked rather than miss an opportunity. He was then two. To prevent his going over the stile we erected a dough face on the side, which frightened him very much. Remained in the house for three days; on the third day he got out by climbing a high back fence and going through a neighbor's garden. This occurred at the age of three.

"He has an aversion to monotony. To quote his own language: 'I have a holy horror of monotony, such as travelling on water affords, unless there is abundant material to take my attention inside the steamer. I could never sit placidly down as some do and watch wave after wave come following each other in toward the ship. This began to grow on me at about my sixteenth year, or a little before, though of course it is shown in my life before. My instinct is to travel about in search of variety. Between the ages of sixteen and nineteen I made more than thirty moves in one town. Within that period I think I lived in every part of the city and its suburbs. It is also a fact that I disposed of my trunk for a valise simply because the valise represented less property than the trunk and thus relieved me of a burden. I regret very much to buy an overcoat, owing to the numerous hot days when it is of no use to me and lies a silent burden on my hands.'"

These are samples of 50 cases of runaways between the ages of one and 3-4 years. They indicate strongly that running away is common among all children at that age. It is impulsive, aimless, wholly unconscious of attendant circumstances, such as bodily danger, anxiety and worry to parents. Oftentimes playfulness, a sort of roguish delight, especially when being pursued by mother or nurse, prompts them to run further. (Cases 1, 2 and 3.)

A sort of imitation, following after anything that moves, fondness for water, to become acquainted with, and to hunt and capture animals,

to search and gather fruits are all stimuli that may touch off and set agoing the nervous, quivering, unco-ordinated organism at this age.

These activities also present within themselves an almost complete picture of a very primitive civilization even before nomadic times, before man had taken the trouble and patience to tame his captured beast for food and labor. The picture is complete when one thinks of the great variety of primitive weapons for hunting and war that are made by young children. A collection of such implements may be seen in one of the rooms in Clark University.

Begging occurs amidst plenty, among children provided with all the wants of child life. Children leave a home of plenty and ask for bread, enter a store and beg for an article of clothing.

There is almost a total absence of anger, planning, deception or injured feelings, previous to their leaving home.

Aside from these temporary, passing impulses, that appear to be a phenomena of normal growth, as much so as gill slits or milk teeth, there is still present in some cases an impulse to go, that is deep seated, a propensity that is a part of the child's character itself, ingrained in the nervous organism, a passion that must be gratified. It dominates not only childhood, but the entire life, increasing with age. Case fifteen exhibits not only this passion, but other traits that seem inseparably bound up with it. Among these are aversion to monotony, love of change, carelessness in dress, and neither care nor appreciation for the value of property.

II. Group of Runaways from 4 to 7 Years Inclusive. (Selected from 80 Cases.)

1. M., 5. Continually runs away to have his own way—has a roving disposition, never stays long in any one place—walking quietly along with his mother who stops to talk with a neighbor, he takes advantage of the opportunity and skips.

2. M., 5. Always follows a band, or a crowd of any sort.

3. M., 4. Runs away as often as he can make his escape, object seems to be to find out where the people are going who pass his house.

4. F., 4. Active child, fond of company, noise and new sights, when let out to play will stay awhile in the yard and then start off; sometimes she will go to the neighbors, sometimes to the store, and sometimes to the pond.

5. M., 5. "When living in the country was continually running to the fields of clover and daisies and playing in the sand. Now living in the city he is so eager for seeing, so excited over anything new, that he's off and away often even after I have told him to stay in the yard." Taken from a mother's diary of her children.

6. M., 7. Thought it would be great fun to go down street *without* his parents; went with the milkman. When left in the town alone suddenly became lost, was frightened and began to cry.

7. F., 5. This child has no fear of anything. She will make friends with all kinds of animals, large or small, will run after wagons which pass the house, will walk up to a stranger and take his hand and go anywhere with him, never giving a thought to home. She will wade in water up to her neck. She starts off in the morning on one of her excursions around the town as soon as she can slip away unseen. Her first act, as soon as she is out of sight of home, is to throw away her shoes and stockings. When found does not try to hide, seems willing to go home, although she may run away again as soon as she finds she is not watched.

8. M., 5. Left home in the morning with another boy to visit a glass factory. Search was instituted about noon and continued till

about 2 P. M., when he returned of his own accord. His sister says: "His little face and hands were black and much besmeared. We were all so glad to see him and get him back again that we laughed and cried alternately. At this he was very much amazed and opened his big blue eyes in wonderment."

9. F., 6. "Would go whenever she had a chance. On a warm day in July she started off through a large cornfield with her little boy cousin of 6. They ran on and on through the corn. Pretty soon F., who was very fond of taking off her shoes and stockings, sat down and removed them, M. did the same—left shoes and stockings in a little heap, and jumping up ran on, F. leading. They finally grew tired and began to think of getting back home, but they found themselves suddenly lost; they began to cry, not knowing which way to go; they ran aimlessly through the corn and finally emerged into the road, when they were rescued. Both repented and promised to do so no more. The shoes and stockings were not found until the fall, when the corn was cut."

10. F., 5. Had been kept at home a great deal. Left one day with a playmate to see the city, went to water works a mile from home, then to the court house and several other public buildings. "These places were new to them, and it was a great fascination for these children to go alone, and not only a satisfaction to go by 'themselves,' and stay as long as they wished, but it was a great delight to tell their associates about it and boast of their little adventure."

These are typical cases of children's fondness for new places, new sights, strange people, desire to do new things not supervised by their elders, make new acquaintance with man, beast, plant and earth, to explore places and experience the unexpected. There is no special interest in any one place or thing, but it is all places and all objects. Anything will set them agoing, a stranger, or loud dressed persons, a peddler, a tramp, a crowd, a team, a band, a procession.

There is much material here for speculation, both for the atavist and teleologist, but more especially valuable hints for pedagogy. These activities are the expression of a very complex organic structure acting not unlike an automaton not well controlled or co-ordinated as yet. The range of stimulus that will set it agoing is wide. Through activity, through experience, comes co-ordination and control. Lloyd Morgan¹ says: "Chicks, for example, at first peck indiscriminately at almost everything that catches their eye, notably at their own excrement. . . . And you may watch the stages of gradual avoidance of pecking at this material ranging from mere hesitation to complete neglect." They learn not to pick up lady-birds after a very few experiences with its distastefulness. "These, though simple cases, are examples of activities under control as the result of experience."

Primitive man, too, had to learn to recognize the animals that would make a repast, that would destroy his food or challenge his strength, and the fruits that are palatable and distasteful. Are not the early hunting and searching activities of the child atavistic, and at the same time giving it a practical acquaintance with nature?

1. M., 7. Runs away to play with other children. Sometimes goes home with them. Fond of playing at the river.

2. F., 4. Had not brothers or sisters; ran away a great deal to play with other children.

3. F., 7. Runs away to play with other children. Mother does not let her get her playthings around and have a real good time, and as she is an only child she likes to go where there are other children.

¹ Lloyd Morgan: Introduction to Comparative Psychology, p. 176.

4. F., 6. Youngest child, good home and plenty of toys, but runs away to play with other children.

5. M., 5. Has to be harnessed and tied to be kept in the yard. Persuades people who are going by to untie him. One day some large boys dragged him across a railroad bridge. He could not get back home. This frightened him so much that he did not care to run away again.

6. M., 5. Loved crowds and gatherings, would not stay at school nor at home. Different means were employed to break him. Was bright, and readily learned his lessons. At seven he quit it. The change which was wrought upon him I think largely due to the fact that his school work was being made more interesting.

7. M., 8. Began to run away as soon as he could walk. Stopped at 8. Due to his mother's discipline and interest in affairs at home.

8. M., 6. Got mad at his little sister, who had charge of him. Mother was sick. He started across a large field, entered a woods, soon grew tired and started back, but was lost. He fell asleep. Was found in this condition. Never left home afterwards.

9. M., 4. Wandered off frequently, once into a strange street. When found was being cared for by an Irish woman. Was always punished for running away. His mother, when a child, was even worse given to running than M.

10. F., 3-4. "I used to run away to play with other children. Was the only child and became lonesome at home. Gate was tied. I climbed the fence. My mother has always been subject to desires for roving. She is not strong mentally, owing to ill health. When everything does not suit her, she works herself up to a great nervous strain, and then goes traveling for a day or two to wear off the evil effects. Sometimes she leave in an injured mood and aimlessly starts out."

These cases illustrate the effort very common among young children to relieve the sense of loneliness, and a longing for playmates; also the less common causes for running away, *e. g.*, anger, disappointment, punishment, injured feelings and the like. Cases 9 and 10 indicate that heredity may have been the controlling factor.

III. Group of Runaways from 8 to 12 years Inclusive. (Selected from 120 cases.)

1. M., 11. Always wanted to be out of doors. Whenever anything did not please him became angry and would take his hat and start on a run. At first he was only gone two days, no one knew where and he would not tell. The older he grew, the longer he stayed away. His parents treated him well and on his return baked him an extra cake and tried many means to please him — did no good. In about a year he would leave again, usually about harvest time. The feeling that he must run away lasted him through life, for he ran away a number of times after he was married, leaving a wife and two children for nearly eighteen months.

2. M., 8. Would wander off in search of adventure, and persisted in doing so in spite of the whippings administered by his father (chaplain to the penitentiary) on his return home. Kept posted on the doings of leading outlaws and adventurers.

3. M., 8 and 10. Both left home secretly. Wandered from place to place. Slept in lumber piles. Had comfortable homes and kind hearted parents. Said "they wanted to go somewhere."

4. M., 8. Went 20 miles from home into the woods, where a great number of men were at work, went on the tote team, made some money. Stayed as long as he wished and reported a very enjoyable time to his worried parents on his return home, though he must have suffered intense

cold and hardships of winter camp life. Now thirteen, and a great home baby. Left off running away gradually.

5. M., 11. Was a leader. Disliked to be ordered to do anything. Otherwise willing and anxious to work. Ran away from home to get work for himself. Succeeded. Work was very hard, but he would not give it up. Parents learned of his whereabouts and had him sent home. "He had been away three months, had earned some money, bought new clothes and base ball and bat. His hardships were many, but he was so persevering that he rose above them. He has grown to manhood and he believes this experience one of the best in his life, as it taught him self-reliance."

6. M., 9. Lived in a quiet place, with grandparents, seven miles from village. Ran away every opportunity to the village to see what was going on and to increase his chances for taking things. Could not resist the temptation to take money. If he could not steal money, would take eggs and sell them, would even ask entire strangers to loan him money. After grandfather's death he still kept up his mischief, and at last stole jewelry, for which he was sent to a reform school.

7. M., 8. "Causes us many a heart-ache these days. He often tells lies to hide some mischief he had done, and sometimes sticks to it for a day or two. He and another little boy ran away from school twice—a thing our other boys never did." (Taken from a mother's diary.)

8. M., 9. "Not satisfied with A's (younger brother) company. Seems determined to get with older boys, and to do this often goes far from home. Then he, to shield himself, does not hesitate to tell wrong stories and insists that they are so."

9. M., 11. "Not satisfied with a generous allowance of spending money, stole sixty dollars from his father when family were asleep. Spent the money on an excursion and treating companions. Was caught and sent home. Had run away before and stayed three or four weeks. Father has sent him around the world to try and reform him."

10. M., 8. Vexed at his father, decided to run away, bought an old boat and started down the river, was caught and brought back.

11. M., 10. Began to run away at 10, seemed to get spells of being disagreeable or ill-tempered, when he would do something that would make him afraid of punishment. On one occasion was set to churning, when he arose and kicked the churn over, then went away. Another time he wanted to milk a pet cow belonging to a little lame sister who always milked her, he knocked the little girl over, then fled. At other times mere mischief seemed to be in him so strong that he would do something that would make him afraid to stay. He once took a notion and painted black spots all over the white pigs, then went away. After the first time the impulse to run away grew stronger, he became more brave each time. Took a trip one fall up the canal, was thinly clad, came home several months later dirty, ragged, and nearly frozen. His trips were never planned; always seemed glad to see all the family on his return.

"This restless nature has clung to him all his life. As I know him to-day he stays in one place only a short time, is quick tempered, a hard worker, and still has these moods of irritable feelings which find their vent in drink and roving."

12. M., 8. Left home clandestinely with a companion one fine spring morning to seek fortune on the tow-path, several miles from home. Returned late at night, foot-sore, weary and hungry. Mother said: "You may help yourself to some bread and milk." In after years he told the story. "I crumbed a whole loaf of bread into a whole pan of milk and had a very comfortable supper." He became a very successful business man.

These are examples of the period of childhood in which the impulse to run away exhibits the genuine traits of *Wanderlust*, (cases 1, 2 and 11).

It is the period in which an inordinate love for certain pleasures, impatience, restricted liberty, inferior home comforts, incompetent parents, injured feelings and anger, desire to earn their own money, are all variable factors in causing runaways.

Planning, all manner of cunning and secret preparation may attend their departure. Very astonishing and serious breaches are committed against the moral law, such as stealing, lying, swearing, willful destruction of property, and cruelty to playmates and animals. It is the period of hardness, indifference, the hot-bed of the chronic forms of truancy and a perennial spring for juvenile crime. The energies of the child readily unite with the katabolic elements in the established order of society and government. He is impervious to moral suasion and the influence of example. The welling up of the great fountain of altruistic motives of adolescence has not yet begun.

On the other hand, as it will be shown later, genuine penitence for wrong doing appears at ages 9 and 10. Oftentimes running away ceases at 8 and 9, owing to new interest in home and society, the discovery of new relation of self to environment and increasing self-respect.

Those answering the questionnaire assigned the following causes for children running away. Impulse to be going form 21% of the causes given. To play with and be with other children 13%. Curiosity to explore and see new sights 11%. Love for outdoors 8%. Lesser causes are loneliness, anger and disappointment, love of change and excitement, to see relatives and friends, impatience of restraint, to seek a fortune, cruel parents and injured feelings, inherited, to avoid work, etc.

Making preparations for leaving, and secretly planning, form a very small (16%) proportion. By far the great majority leave openly at any time, many go without covering for the head, without shoes and without raiment. This applies, of course, to the *first* time of running away, and more especially to the younger children. If the habit persists, various devices are employed to escape unnoticed.

The great majority went to the water, next in order comes woods and fields, followed by streets and neighbors, then to various places of activity, *e. g.*, factories, saw-mills, canals, erection of large buildings, and to the railroad or depot. Many were found at play, sometimes alone and talking to themselves, some still running, others at work, and still others hiding, stealing, asleep, or crying. Quite a number were found crying, and of those who had fallen asleep, the dried tear on the cheek, feverish brow and frightened manner of awakening, indicated that they, too, had been crying. Mention is made of this because the crying was caused by the overwhelming sense of being lost. They run on and on, throwing off garments and any impediment that obstructs the full swing of the impulse, and then suddenly, through fatigue, perhaps, they stop, impulse has vanished, or perhaps shifted to the farthest opposite extreme from that coincident with the running. If the former was positive, it is now negative. The whole being is bewildered, in utter confusion with the sense of being lost. The sense of orientation is gone, and with this comes, not in reality, but an equivalence to a state of paralysis, not a limb nor a muscle moves with any precision. They dart here, now there, all within a short radius, and when completely exhausted fall asleep.

It is remarkable, too, that those who experience this shock seldom run away again.

✓ To sum up a portion of the data thus far examined, it appears:

First, that running away in childhood falls into three periods, each differentiated from the other by certain characteristics, impulses and activities. The first period extends from the time the child is able to walk with ease to between three and four years. It is common to all children, regardless of home life or physical conditions. It is characterized by aimlessness, openness, and unconsciousness of danger or any wrong. During their little escapades some very primitive as well as semi-barbaric practices crop out, *e. g.*, chasing and capturing animals, begging, taking things that please their fancy, etc.

The second period, extending from 4 to 7 years inclusive, shows a dominating love for play and companions, and outdoor life. It exposes in rough outline the child's disposition, likes and dislikes, on a dim background of home life, parentage and physical condition. Home life is illustrated when the child leaves on account of loneliness, absence of toys and other childish amusements. The personnel of the parents is frequently indicated when the child is broken of the habit by firm and proper home treatment, or when the child leaves on account of cruelty of parents. It is the period of curiosity, the age of attempts, and a sort of diffused universal interest for nature and man. All things attract him, seeks the acquaintance of any and everybody, enjoys new sights and the unexpected, likes to do new things as a test of his courage and to make explorations into new vicinities.

Anger, injured feelings, desire for wider liberties begin to appear at the latter end of the period; also an occasional truant is born in the sixth or seventh year. It is also worthy of notice that many quit the habit altogether toward the close of this period and the beginning of the next. Focusing down of interests, a growing love for parents, attachment to certain groups of playmates, fondness for school work and teacher are all forces overcoming and destroying this powerful relic of primitive man.

The third period, extending from eight to twelve inclusive, brings out in bold relief the part played by home life and comforts and parents in the behavior of the child. In this period the child frequently abandons the habit altogether, due to the influence and integrity of the home, or he begins it in serious form for the first time in life, due to incompetent parents and an unattractive home, or to the impulse itself, which dominates all his life activities, unfitting him to wrestle with fortune and destroying the desire to do so. He becomes more impulsive in action, non-persistent in tasks, impatient of restraint, careless in person, indifferent towards property. He has little or no sympathy with modern movements of society, and will not fuse with it, but stands out like an outcrop of an older formation, pointing the genetic psychologist back to the probable origin of the migrating instinct.

Section II. One hundred and ninety-five returns were received in answer to Q. III, "Describe any case of truancy from school or church, its motives, traits of the child, mode of concealment."

A consideration of this data brings us into closer quarters with the truant problem.

The following typical cases illustrate the character of the returns together with the probable causes of truancy.

1. *To play and be out doors.* M., 10. Plays truant frequently. Sometimes he stays around grocery stores, but usually plays with groups of children whenever he can get them together or can find them. He will tell a lie as quick as the truth. Has a good memory. Always has good lessons, learns them readily.

Dislikes School. M., 8. Ran away from school. Did not try to

conceal it, nor did he care for the punishment received from his parents or teacher. He was not inclined to like study.

To Eat and Steal. F., 7. Left school to obtain meals from a charitable institution. She was underfed, undersized, parents poor, child reticent. She merely disappeared from school and presented herself at the other establishment. Kept her secret a week.

M., 13. Left school at noontime with another boy to "steal apples" from a rich farmer.

Impulse to Go Off. M., 13. Was given to running away from home and playing truant. He was pleasant, handsome, popular with the boys, giving no trouble while at school, a good student and very smart.

In April vacation, not very long after he had entered school, he disappeared. The police were employed, who finally found him at work in S—, dirty, and in a miserable condition. He had no pride. He had a mania of going off with no intention of returning. He gave no reason for going. He is now on a fruit ranch in California. His style is that of a cowboy.

Impatient of Restraint. F., 16. Ran away from school on an average of three days in the week. She did this because she was too indolent to get her lessons. She was the oldest of the children and had always been taught that she was very smart. She possessed a determined disposition and wished to have authority over her associates.

Dull. M., 13. Not all bright, has a good home, good food, well dressed, but can't get his lessons.

M., 17. Rather dull and heavy. Disliked study, but not otherwise troublesome. Ran away, got to B. Stowed himself away in a freight car. Slept there over night, but seeing in the morning that the car had not moved he returned to school.

Lazy. M., 16. Came from a wealthy home, was lazy, but not ugly. Hated to study and to be driven to his books. Had been in school some little time when the prospect of study again upset him just after a vacation (in the warm weather). He suddenly disappeared; was found after a week hiding in a cave that he had dug out in the woods within half a mile of the school. Other boys had carried him provisions.

Poor Home. M., 15 and 14. P. came from a poor home. His father a drinking man. This boy was very happy at school, but was led off by L. In the spring time both started for New York (both lived in N. Y.) but were caught and brought back. They were thoroughly frightened by the policeman, who threatened to lock them up. They never ran away again.

Indulgent Home. M., 15. Had a pleasant home and indulgent mother. Father dead. Ran away from school several times. Ran home, of course, walking all the way or borrowing car fares. Mother had no control over him. Could not make him return to school. He hated study. As the habit of running off was not broken, I advised the mother (and after much persuasion she consented) to have the boy arrested the next time he ran home from school. He was arrested and put in the lock-up and given the choice to return to school or be put in the Westboro Reform School. The boy was cured. Afterwards became a railroad fireman.

Influenced. M., 10. Was induced by another boy to play truant. Both went down to the wharf after licorice root. He was very much afraid after he had done this, and went home when it was time for school to be dismissed. On entering the house his mother (having heard what he had done from the other children) asked him where he had been, at this he burst into tears and begged to be forgiven,

saying that he would never do it again. He was pardoned and has never done it since.

Weather. F., 10. "Instead of going to school, took my lunch and spent the whole day playing along a brook in a cornfield. I did it because it was hot in school and to see how it would go to play truant. After returning home I felt ashamed, could eat but little supper. Finally confessed to my mother."

Home Life and Disposition. M., 5. Had a father and stepmother, his own mother died when he was 2 years old. At first he merely did not like to go to school, did not like the confinement, did not want to learn to read. He would loiter along the road until too late for school, then would go behind stores or in some secluded spot and play in the dirt and pick up strange or curious articles that he might find. When school was dismissed, he would see other children going home and would go home himself. Sometimes he would find other children who did not attend school and would play with them. He seemed to find a great delight in digging out with his fingers the leavings in sugar barrels and in picking up decayed oranges or apples from refuse piles. Whenever his father knew that he did not attend school he whipped him severely, locked him in a room alone, deprived him of his meals. He would not stay at school more than one day at a time. A kind old gentleman induced the boy at 7 to come to his home each day and pick up chips and do light work. Through this man's influence he was induced to attend school about two weeks, and might have continued, but the old man found a little fault with the boy one day and spoke sharply to him, the boy became angry and would not go near the old gentleman or the school any more. His stepmother did not care where he was or what became of him. He very often, when a little older, slept at night in a barrel or box behind stores, did not care to play with other children, preferred to be alone. He was morose, quiet, very quick tempered and obstinate, would fight, strike, throw stones and clubs at other children on the least provocation, and sometimes was severely hurt by larger children. He soon began to quarrel with his stepmother, threw stones at her through the window, ran away and did not return for several days, until his father caught him one day and dragged him home with many a kick and cuff. At about 13 years of age he fought so much with his stepmother that his father put him in a Reform School. After he was released he chose the worst of company, was arrested for stealing and shut up a second time. Before dying, he said his father and stepmother were to blame for the life he had led. He was the youngest of his father's first family. His two sisters lived out and took no interest in him. His food and clothing were not good. He had no toys, no books, no pin-money, no affection shown him.

Aside from the causes to be gleaned from these cases there are mentioned "homesickness," "out of humor with the teacher," "to defy authority," "afraid of being late," "desire to be alone," "religious scruples," "to meet a member of the opposite sex," etc.

These instances show first, that truancy is common to all children regardless of sex, physical, parental and home condition; second, that the immediate causes are many and quite varied.

The following table is a comparison of the home, parents, and mental traits of truants with runaways.

ITEM.	Runaways 201.	Truants 195.
	Per Cts.	Per Cts.
Don't own home,	46	41
Parents living,	81	76

ITEM.	Runaways 201.	Truants 195.
	Per Cts.	Per Cts.
Good food,	89	81
Spending money,	61	54
Affectionate,	60	44
Oldest, youngest, only group,	79	83
Quick tempered,	75	64
Laugh easily,	75	42
Generous,	70	62
Untidy,	52	55
Destruction of property,	68	61
Girls,	25	19

It shows that runaways are more liable to be destructive of property, and quick tempered than truants, while in all other respects, *e. g.*, home comforts, untidiness, affections, etc., the comparison favors the runaway, placing the truant in a rather more unfavorable setting. One is impressed, however, with the close parallelism that holds throughout the comparisons.

Fifty-six per cent. of the truants are reported as "not affectionate"—of which 52% had poor clothing and food and no spending money, except what they earned, showing a striking correlation between wholesome surroundings and the emotional life of the child. Again the greater number of the 55% that were untidy in dress, destruction of property and regardless of others' rights, were likewise the children of poverty, rags and dirt.

Attention has been called to the large percentage found by the oldest—youngest—only child group of runaways. It is found that the percentage (83.5%) is still larger among truants.

The writer has had during this investigation no preconceived notions as to the probable degeneracy of truants and runaways. Neither has advantage been taken of hints or suggestions that might give credence to such a view, and yet the failure to give full value or to ignore the probable significance of the oldest—youngest—only child group would be a very unscientific procedure.

Of 120 truants, 16%¹ are neither oldest, youngest nor only child; 30% belong to the youngest group; 27% belong to the oldest child; and 25% belong to the only child group. What is the significance of being the first or last child of a family? Is it generally unfortunate to stand in this numerical relation in the household?

Space prohibits a thorough discussion of the subject. A few general facts must suffice.

First: It is generally agreed that the normal period for child-bearing is between the ages of 24 and 35. Second: "That² mothers under 24 and over 35 are those more specially liable to have idiocy in their children."

Korosi, quoted by Ellis, concludes, after having examined 24,000 children, that the most healthy children have a mother below the age of 35; the children born between 35 and 40 are 8% weaker; after 40, 10% weaker.

Third: The children of father under 20 and over 40 are liable to have weak constitution, feeble minds, and prone to break the moral law. "Marro³ found by dividing fathers into three groups according

¹ Further investigation of the migrating problem shows that among lovers of home and persons who have never run away (cases 225) 45 per cent. are neither oldest, youngest or only child of the family, as opposed to 16 per cent. in the case of the truants under consideration.

² Duncan: Sterility of Women, p. 65.

³ Ibid: p. 93-94.

to age at conception: the first included those in the period of immaturity, which he reckoned as below 25 years of age; the second was the period of maturity from 26-40; the third, from 41 onward, the period of decadence. He found that the largest proportion of immature parents is among the class of thieves, although among the insane the proportion is still larger. More remarkable is the abundantly large proportion of criminals with parents belonging to the period of decadence."

Mitchell¹ says: "Among 443 idiots and imbeciles consecutively examined, I found 138 first born or 31.1 per cent; and 89 last born, or 20.1 per cent." That is, over 50% of 443 idiots belong to either the oldest or youngest child. In the present investigation the youngest child in the youngest group is 6 years, indicating that he would probably remain the youngest of the family. It is almost needless to add that the truants belonging to the oldest group are more liable to be the offspring of immature parents and that the youngest child of decadent or declining parents, and would, therefore, suffer in mind and body a lack of growth energy. He will fail to flower out, and according to Mercier and others, a lack of initial growth force expresses itself in a failure of the complete development of the nervous system. For this reason he is less able to meet the demands of home and modern school life. His power of nutrition, his rate of metabolism is not keyed to the intensity of the stimuli arising from school life; to get in harmony with a stimuli equal to his rate of metabolism he seeks surroundings less exacting, which to the writer is oftentimes a recommendation for the boy and an unfavorable comment on modern school regime.

What is the meaning of the only child?

Upon this point Duncan² says: "Only child fertility or one-child relative sterility occurs in two forms; as an exhaustion of the fecund energies leaving the general bodily health vigorous, or as an exhaustion of both sexual power and general constitutional strength." In either case the chances are in favor of the child inheriting a weak constitution. 25% of 120 truants (30) form the "only child" group, and of this number 86% had both parents living at the time of observation, so that it looks as if the only child in this investigation cannot escape suspicion of a feeble constitution. Aside from these physiological considerations the youngest—oldest—only child group presents very often peculiar and unique social relation to the family and community. Case F. 16 (impatient of restraint), illustrates the domineering and impetuous child often found in the oldest child. Every one knows that the youngest child is the "spoiled child" of the family, and the only child is the petted child of the community.

Mode of Concealment. By far the great majority aim to join the other children on their way home from school and so manage to return home at the usual time and with their regular companions. The teacher is usually deceived (?) by a note written by the pupil himself or by some friend. Some tell their parents that their good conduct earned them an early dismissal or a half-holiday, others that the teacher is attending an Institute or is sick, or has died.

Places of Concealment. Woods, up a tree, cave, dugout, behind old buildings, on the roof, in the cellar, in bath-room, in a barrel, in a box, in a lumber yard, wood shed, pigeon house, freight car, and the like.

Where they Went. The great majority went to river, brook, pond, to fish, swim, skate, and play in the water. Next in order comes the woods and fields; then to play ball and other games, to see parades and be in large gatherings and on the street. Many are described as

¹ Duncan: Op. cit., p. 62.

² Duncan: Op. cit., p. 14.

having an immoderate love for sight-seeing, excitement and out door activity. There is much material here for speculation, especially that furnished by the water psychosis, and also valuable hints as to the usefulness of out door excursions, etc.

Duration of the Habit and Number Cured. The duration of the period at which the child will play truant cannot be made out from the present material. It is noticed that many stop at 8 and 9, while others begun at that time. The average age of the truants is 13. The length of truancy varies all the way from a single instance to the entire school life. Sometimes it is the beginning of a series of offences against society that ultimately leads the unfortunate to the reformatory or State prison. Ninety returns on this point show that 58% are cured by firm, intelligent measures of parents and teachers. Of the remaining 42% some outgrow it, others stop and settle down to serious labor, and still others are cured by reform and truant schools, and finally there is that residuum to which truancy is but a stepping stone to the higher degrees of trampdom. Of the 42% that were not cured by home and school influence, 40% came from inadequate homes.

Thus far our notion of the truant rests on evidence gathered for the most part at second hand. The next chapter presents the truant from his side, together with certain facts gained through anthropometry.

CHAPTER III.

ANTHROPOMETRICAL AND SOCIOLOGICAL.

Section I. To ascertain the truant's side of the story the following series of five questions were sent to the several truant schools of the State:

- I. What caused you to play truant?
- II. Who helped you?
- III. Where did you go and what did you do?
- IV. What did you tell your teacher and parents?
- V. What did you like and dislike about your school?

The principals and teachers of the truant schools were asked to present these questions to the boys in the form of a language lesson and to encourage them to express themselves as fully and freely as possible. One hundred and sixty boys wrote papers as requested. They seem to have rejoiced at the opportunity to unburden themselves in the manner suggested and to have told a "plain unvarnished tale."

The following are examples of their responses.¹

1. "I played truant because I didn't like to go to school. Nobody helped me to play truant—I helped myself. My father asked me why didn't I go to school; I said I was late; the teacher asked me, I said I had to go to Boston. In the summer time I went down swimming and in the winter I threw snow balls. I didn't like the teacher and I didn't like to stay in school all day."

2. "I played truant because I wanted to. I played truant with boys, but I don't want to tell their names. I told my parents that I was sick. I told my teacher that there was a disease in my house. I went to the Charles Street gymnasium. I disliked everything in school."

3. "Going with bad company helped me to play truant. I told my parents that I was at school and told them what happened, and told my teacher I had to go to the city for my mother. I went to the city, to the theaters and such places, with bad company. I did not dislike anything about my school, but liked it very much indeed."

4. "I played truant because the day was good. No one helped me play truant. I didn't tell my mother or teacher anything, I went around the streets. I did not dislike anything in the school."

5. "I played truant because I didn't like to go to school. The boys helped me to play truant. When I played truant I went in swimming. When I came home I told my parents that I went to school, and when I went to school the next day I would tell my teacher I was sick. I liked my school because my teacher liked me, and I disliked it because I had to go every day. When I came home after not going to school, I would not go in the house until 9 or 10 o'clock at night. I used to feel sorry to see all the boys coming and going into their homes after coming from school. I was ashamed to go home. My mother used to stay awake all night or until I came in. I used to mind my mother almost all the time. I was arrested once for breaking glass. I used to curse, but hope I never will again. The worst thing I ever did, and the last I have to say is, I am very sorry I disobeyed my parents."

¹ The answers represent five truant schools in the State of Massachusetts.

6. "Because I wanted to have a smoke and to go picking up cigarettes. James Kelly and Ellis Wentworth helped me to play truant. I went up the Merrimac River stealing boats, and Jim Reading (truant officer) caught me. I told my parents that I went to school. I told the teacher that I was very sick and that I had the measles and would come next day, but I never went. The teacher was cross with us and I liked nothing about the school."

The evidence furnished by these one hundred and sixty compositions becomes valuable and unique, when reckoned with the data on run-aways and truancy previously considered and with facts of anthropometry yet to be treated.

"What caused you to play truant?"

Sixty-one per cent. of the answers to this question assign causes apart from themselves, *e. g.*, disliked the school, the teacher, punishment received, or bad company, etc. Thirty-nine per cent. give causes originating within themselves, and the greater number of these left school to have fun, be out doors, to go to places of excitement. A few went to work. The answers to the second question illustrate forcibly the influence of companionship on a boy's conduct. Fifty-five per cent. were helped and influenced by other boys, a few by an indulgent grandmother, or a kind uncle and aunt. Some were persuaded to leave by men of the theatrical and peddler type. Those who played truant on their own account use such expressions as "No one helped me," "helped others," "it came into my mind to play truant," "myself made me run away," "helped myself," which savor with individuality, a trait that I found, through personal contact, pronounced in many.

Only 2% of 160 stayed at home, the rest, 98%, started for school, and either played truant on the way or left school at a convenient time during the day. A portion went to other towns and cities. The majority remained in their own town, a larger part of which spent their time in some form of activity and pleasure afforded by water, *e. g.*, swimming, learning to swim, rowing, sailing a boat, or learning how to sail one, fishing, playing in the water and skating. Others went to the gymnasium, theater, ball games, horse races, fairs, hunted cigarette stubs, stole, rode on various sorts of delivery wagons, hopped freight cars, amused themselves in dodging the truant officers, took a special delight in "getting chased." It is worthy of mention that few loafed on the streets. Their shelter at night was the woods, or a cave, a dugout, a dry goods box.

What did you tell your parents and teacher?

Eighty-seven per cent. lied to their parents, while 84% lied to their teachers. Lying to the parent is rather uniform, viz.: that they had attended school, and in many instances they sought to produce evidence to confirm this statement. Others report their good conduct earned them a half holiday, the teacher kept them after school, etc.

The opportunities for deceiving the teacher are greater, of which they took advantage, as are displayed by the varied forms of their lying. The following is a list: Sick headache, sick (without specifying the cause), mother sick, father in the hospital, to go for the doctor, had been crippled, to get teeth pulled, had measles, had cramps, had been vaccinated, disease in the house, earache, pain in the stomach, to run errands, kept at home, to mind the baby, to help wash, to go to church for instruction, etc. These boys are from 9 to 14 years of age, the age in which lying is regarded as a very minor breach of the moral law; so that when bodily discomfort and the good will of superiors are at stake they traffic in it freely without compunction of conscience.

In specifying their likes they show no great uniformity, unless it is, perhaps, for the out door games and exercises that the school affords. Gymnastic exercises, ball games, fire drill, nice play grounds are mentioned. Others specify the teacher, certain playmates, studies, etc. 66% disliked school life. 38% dislike the teacher, one states that "the teacher was to blame for everything." Among other things are mentioned the following: disliked to stay after school; certain studies; the whippings; prayers and catechism; to stay in the school five hours; to stay in the school nice days; disliked everything; disliked the looks of the school; disliked the girls; master and principals; disliked the sister superior, etc.

SECTION II. ANTHROPOMETRICAL.

This data was collected to ascertain whether or not there is anything in the truant's physical condition that will help to account for his offense against society, to see if his conduct is a function of a special physical setting, of certain fundamental physiological conditions.

To determine his physical condition the following plan was adopted :

I. The weight in slippers (without coat and vest), the height, and girth of chest over one garment was determined of 218 truant boys December 29th, 30th and 31st, 1896. During the week beginning Jan. 18th, 1897, the weight and similar measurements were made on 613 boys of Worcester public schools under the same conditions.

Nationality and occupation of the parent were obtained of both groups.

II. From April 5th to 8th, inclusive, a second series of the same determinations were made on the same truant boys, and during the week of April 25th the same boys in the public schools were remeasured. A strenuous effort was made to have the conditions of the second determinations similar to those of the first. This was unavoidable in some cases where the boys had changed their winter for spring underclothing. This occurred in both truant and public schools, which lessens the error to some extent. In these measurements regard was had only for the actual increase or decrease in weight, and for the increase in height over the weight and height first observed.

III. The sight and hearing of 113 truant boys were tested. The attendant physician of the North Chelmsford truant school tested the sight and hearing of 62 boys. I examined 51 boys of the Roxbury Parental School for sharpness of vision and hearing. Snellen's test cards were used for acuteness of vision and the ticking of a watch for the sensitiveness to sound.

The results of the first series of determinations show (see Tables I and II) that the mean heights, weights, and girth of chest of the truants are less than the public school boys in every instance, except at the age of 10, at which age they are equal in weight and height.¹ These relations are diagrammatically expressed in Chart I. The chart shows that the height curve crosses the weight curve between the ages 12 and 13 of the public school boys, while those of the truants boys do not cross until the ages of 13 and 14 are reached.

The results of the second series of determination show (see Table V) that the public school boys have gained more in height and less in weight than the truants. A much larger percentage of the former lost in weight. These relations, expressed in curves, show the increase-weight curve of the truants far above that of the normal, while the

¹ For comparing weights, etc., of Worcester Public School boys with school boys elsewhere. See Table II.

TABLE I.
Showing average mean weights and heights (in slippers), rate of increase, etc., of Public School Boys of Worcester, and Truant School Boys of Massachusetts.

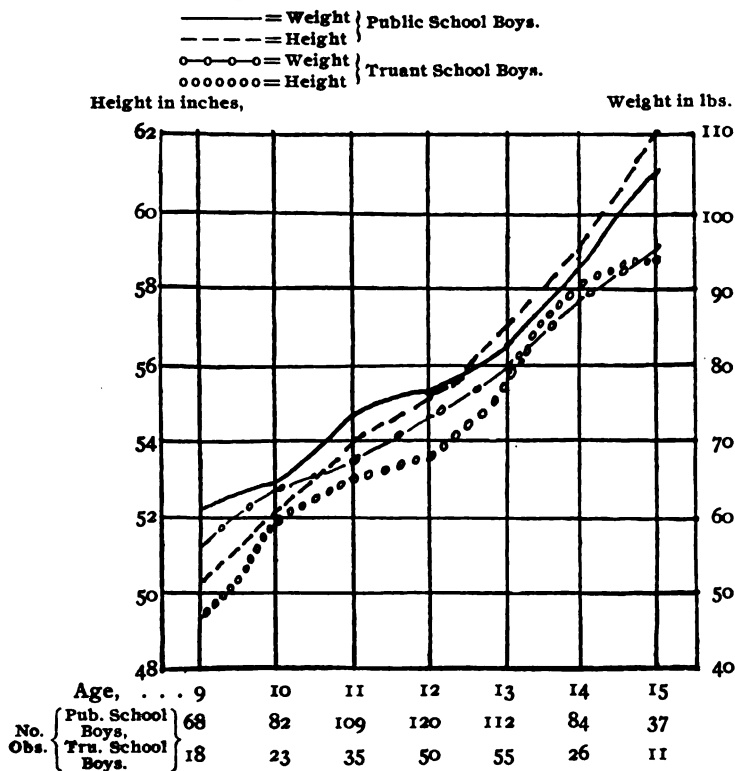
HEIGHTS.									
WEIGHTS.									
PUBLIC SCHOOL BOYS.					TRUANT SCHOOL BOYS.				
No. of	Average	Mean	Rate of	Age.	No. of	Average	Mean	Rate of	Age.
Observations.	Weight.	Weight.	Increase.		Observations.	Weight.	Weight.	Increase.	
68	62.10	61.43	—	9	18	57.73	56.75	—	9
82	65.56	63.50	2.07	10	23	64.75	63.51	6.75	10
109	71.43	72.00	8.50	11	35	69.85	68.25	4.70	11
120	77.27	76.00	4.00	12	50	74.55	72.37	4.12	12
112	87.49	83.12	7.12	13	55	83.30	80.25	7.88	13
84	93.98	93.25	10.13	14	26	85.98	89.50	8.25	14
37	105.24	105.00	11.75	15	11	94.00	95.00	5.50	15
Total, 612					218				
PUBLIC SCHOOL BOYS.					TRUANT SCHOOL BOYS.				
No. of	Average	Mean	Rate of	Age.	No. of	Average	Mean	Rate of	Age.
Observations.	Height.	Height.	Increase.		Observations.	Height.	Height.	Increase.	
68	50.91	50.81	—	9	68	50.91	50.81	—	9
82	52.03	52.25	1.44	10	82	52.03	52.25	1.44	10
109	54.20	54.25	2.00	11	109	54.20	54.25	2.00	11
120	55.79	55.37	1.12	12	120	55.79	55.37	1.12	12
112	57.04	57.25	1.88	13	112	57.04	57.25	1.88	13
84	60.00	59.87	2.62	14	84	60.00	59.87	2.62	14
37	62.21	62.00	2.13	15	37	62.21	62.00	2.13	15
Total, 612					218				
PUBLIC SCHOOL BOYS.					TRUANT SCHOOL BOYS.				
No. of	Average	Mean	Rate of	Age.	No. of	Average	Mean	Rate of	Age.
Observations.	Height.	Height.	Increase.		Observations.	Height.	Height.	Increase.	
68	50.91	50.81	—	9	68	50.91	50.81	—	9
82	52.03	52.25	1.44	10	82	52.03	52.25	1.44	10
109	54.20	54.25	2.00	11	109	54.20	54.25	2.00	11
120	55.79	55.37	1.12	12	120	55.79	55.37	1.12	12
112	57.04	57.25	1.88	13	112	57.04	57.25	1.88	13
84	60.00	59.87	2.62	14	84	60.00	59.87	2.62	14
37	62.21	62.00	2.13	15	37	62.21	62.00	2.13	15
Total, 612					218				
PUBLIC SCHOOL BOYS.					TRUANT SCHOOL BOYS.				
No. of	Average	Mean	Rate of	Age.	No. of	Average	Mean	Rate of	Age.
Observations.	Height.	Height.	Increase.		Observations.	Height.	Height.	Increase.	
68	50.91	50.81	—	9	68	50.91	50.81	—	9
82	52.03	52.25	1.44	10	82	52.03	52.25	1.44	10
109	54.20	54.25	2.00	11	109	54.20	54.25	2.00	11
120	55.79	55.37	1.12	12	120	55.79	55.37	1.12	12
112	57.04	57.25	1.88	13	112	57.04	57.25	1.88	13
84	60.00	59.87	2.62	14	84	60.00	59.87	2.62	14
37	62.21	62.00	2.13	15	37	62.21	62.00	2.13	15
Total, 612					218				

positions of the increase-height curve are reversed. The truants fall below the public school group at every age (see Chart III).

Of the 113 boys tested for sight and hearing, 38% were defective in sight and 47.7% dull of hearing. Of the 54 defective in hearing, 55.5% had abnormal vision.

CHART I.

Curves of rate of growth of Public School and Truant Boys.



The results of Dr. Reichard's¹ extended investigation on the hearing of children show 22.27% defective. Dr. West² found 41% of Worcester public school children defective in sight below the ninth grade. For the ninth grade the defectiveness was 18%.

These are the findings respecting the physical conditions of two hundred and eighteen truants. What is their meaning? Before one attempts to interpret these facts, the nationality and occupation of the parents of the two groups of boys must be compared, that no mistake nor unjust discrimination be made against the truant boys. (See Table IV on nationality.)

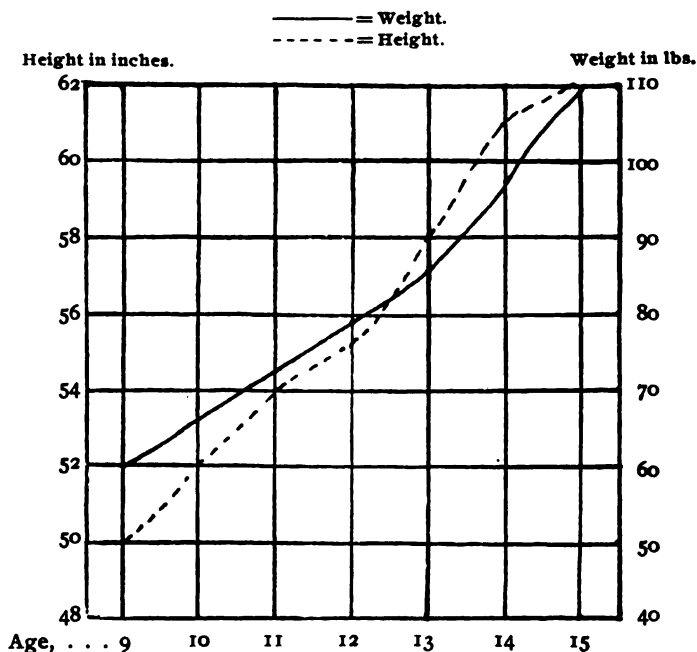
¹ Chrisman: PEDAGOGICAL SEMINARY, Vol. II. Summary from Reichard.

² West: *American Journal of Psychology*, Vol. IV.

Both groups represent a conglomerate nationality. The Swedes are in the majority, followed closely by Americans in the public school group. In the truant group the Irish lead, followed by Americans, with French Canadians next in order.

CHART II.¹

Curves showing relation of weight and height of Boston School Boys.²
(American.)



It has been shown among the adult population of the British Isles³ that the Northern or Scandinavian element is larger than the Teutonic, and the Teutonic than the Celtic. The difference would be less among their children under like conditions, yet the fact cannot be ignored in the present case where these racial elements are so pronounced. Accordingly the data has been reconsidered in three ways. (1) The weights and heights of the Swedes of the public school boys were compared with those observed of the mixed population of the same group to see to what extent, if any, they affected the standard. Table III shows that the Swedes are not a disturbing factor in the public school group.

II. The Irish form 44% of the truant group. Can it be that such a large Celtic element has lowered the weights and heights of the truant? The weight and height of the truant Irish boys are compared with the truant mixed population. They show a close parallelism, ex-

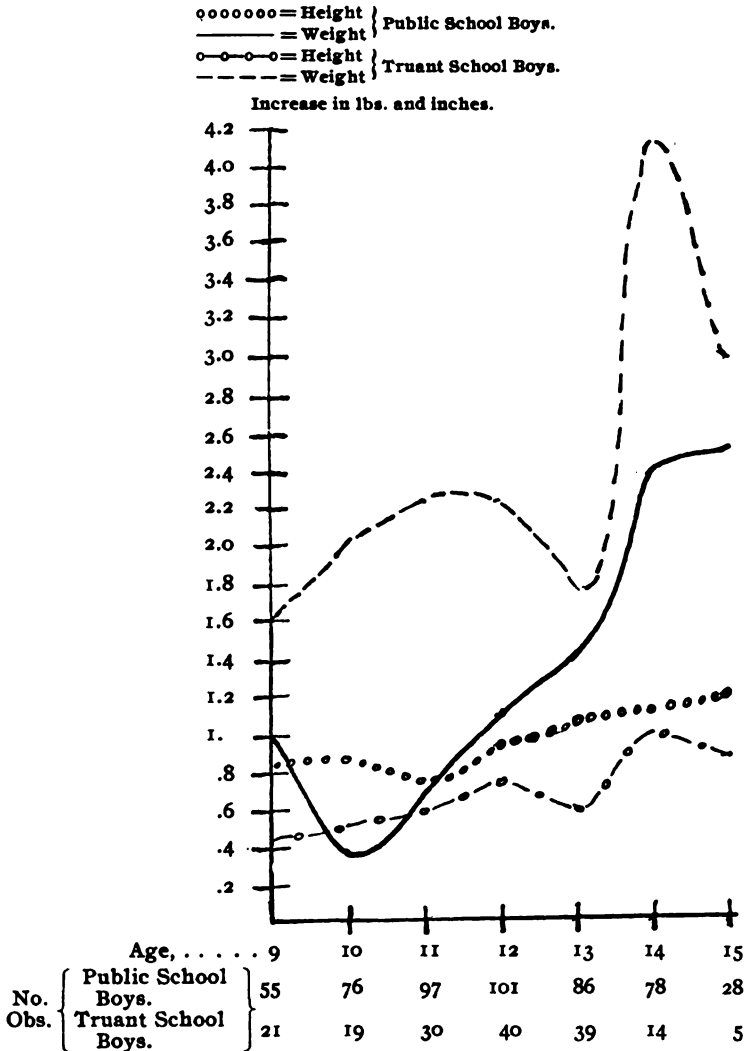
¹ This chart is inserted merely as a convenience for comparison.

² Measurements made by Bowditch, Mass. State Board of Health, pp. 314-315, etc.

³ Roberts: Manual of Anthropometry, p. 95.

CHART III.

Curves showing increase in Height and Weight during three months, Jan., Feb., March.



cept at ages 13 and 14, when the weights have been materially lowered by the Celtic element; and yet the difference between the Irish truant weight and the mixed truants, at these two ages, barely equals the difference between the mixed truant weights and the weights of the public

TABLE II.

Showing girth of chest and ratio of weight to chest of Worcester Public School Boys and Truant School Boys of Massachusetts.

GIRTH OF CHEST.				WEIGHT, HEIGHT, ANNUAL INCREASE, ETC., OF BOSTON PUBLIC SCHOOL BOYS. (BOWDITCH. ¹)												
PUBLIC SCHOOL BOYS.				TRUANT SCHOOL BOYS.						BOSTON PUBLIC SCHOOL BOYS.						
Age.	No. Obs.	Mean Girth in Inches.	Ratio of Wt. to Girth.	No. Obs.	Mean Girth in Inches.	Ratio of Wt. to Girth.	American.			Irish.		American.		Irish.		
							Mean Weight.	Mean Height.	Ratio of Wt. to Ht.	Ratio of Wt. to Girth.	Mean Weight.	Mean Height.	Weight.	Height.	Weight.	Height.
9	68	23.48	2.65	18	23.28	2.43	59.97	50.09	1.22	2.59	58.92	49.53	5.54	1.93	4.80	1.81
10	82	24.30	2.63	23	24.27	2.61	66.62	52.21	1.30	2.59	64.99	51.57	6.65	2.12	6.07	2.09
11	109	25.34	2.83	31	24.92	2.73	72.62	54.01	1.35	2.72	69.60	53.10	5.77	1.80	4.61	1.53
12	119	26.28	2.36	46	25.80	2.80	79.82	55.78	1.39	2.82	75.70	54.82	7.43	1.77	6.10	1.72
13	111	27.28	3.04	49	26.72	3.04	88.26	58.17	1.45	2.95	82.84	56.70	8.44	2.39	7.14	1.88
14	81	28.53	3.26	25	27.80	3.21	99.28	61.08	1.55	3.23	91.19	58.88	11.02	2.91	8.35	2.18
15	36	29.90	3.51	10	28.84	3.29	110.84	62.96	1.65	3.46	101.21	61.15	11.56	1.88	10.02	2.27

¹ Report of Massachusetts State Board of Health, p. 314, etc., 1877.

TABLE III.
For comparing the weights and heights of different and the same nationalities with each other and with mixed nationalities of the Public Schools of Worcester and Truant Schools of Massachusetts.

Age.	PUBLIC SCHOOL. MIXED POPULATION.				PUBLIC SCHOOL BOYS. SWEDES.				PUBLIC SCHOOL BOYS. IRISH.				TRUANT SCHOOL. MIXED POPULATION.				TRUANT SCHOOL BOY. IRISH.			
	No. Observed.	Average Weights.	Average Heights.		No. Observed.	Average Weights.	Average Heights.		No. Observed.	Average Weights.	Average Heights.		No. Observed.	Average Weights.	Average Heights.		No. Observed.	Average Weights.	Average Heights.	
9	68	62.10	50.91		37	62.74	50.74		10	64.37	50.31		18	57.73	49.42		10	58.68	49.41	
10	82	65.56	52.03		32	66.64	52.7		18	64.26	53.24		23	64.75	51.77		11	67.08	52.84	
11	109	71.43	54.20		40	71.44	54.30		23	70.59	54.06		35	69.85	52.61		23	69.60	53.03	
12	120	77.27	55.79		31	75.18	55.60		24	74.22	55.30		50	74.55	53.99		24	74.09	54.41	
13	112	87.49	57.25		33	85.16	55.85		24	82.49	57.68		55	83.30	55.71		26	78.54	54.93	
14	84	93.98	59.87		12	88.09	59.11		22	94.39	60.64		26	85.98	57.45		8	77.84	57.43	
15	37	105.24	62.00		3	103.33	59.54		13	116.52	61.98		11	94.	57.72		4	92.62	58.06	
Total.																				

school group. So here again the racial element fails to account for the whole difference between the truant and public school boys. (See Table III.)

III. A direct comparison made between 96 truant Irish boys and 134 public school Irish boys shows a greater weight at every age, for the latter, except at 10. The difference between the weight at 11 years is also slight. It would seem that ages 10 and 11 are periods of equalization in the life growth of man. A period when heights and weights become more nearly equal, regardless of nationality and occupation.

On the whole it is evident that differences of race does not account for the large difference already indicated.

The two groups were next compared according to the occupation of their parents. The occupations were divided into professional, mercantile, skilled and unskilled—a classification recommended and followed by Dr. Bowditch. For a comparison of the occupations of the parents of the two groups see Table IV.

This comparison is decidedly in favor of the public school group, if the occupation of the parent reflects at all the tone and propriety of the home. It is fair to assume that the home of the merchant and skilled laborer is less liable to privations and irregularities in the necessities of life than that of the unskilled laborer, whose minimal value as a producing factor greatly menaces the steady supply for the home.¹

The home conditions are better appreciated from the facts gained by queries addressed to the boys themselves, and to the officials and records of the truant schools. It was found that 65% of 180 boys had incomplete homes, by which is meant the absence of father or mother, or both, by death, insanity, separation or imprisonment. (See Table IV.) Seventy-seven (42.7%) are partially or totally orphaned. The great majority of this number falls within the ages 9, 10, 11 and 12. There were no orphans present at 14, and only 1 at 15. This fact deserves emphasis, for the reason that the significance goes farther than the loss of the parent to the home, which fact may often be a source of truancy. The death of one or both parents occurring while their offspring is yet in childhood, is an indication that their parents are of an inferior stock.²

If there is a causal connection between the juvenile criminal and degenerate parentage, then the fact that 18% of 180 truants had committed petty crimes would strengthen the inference concerning the degeneracy of their parentage. Again, the relation of the truant to the parents points to incompetent parentage. The fact that the welfare of the child is transferred to the State, is evidence of the impotency of the parent to control the child. The character to control and influence the child aright is wanting.

Mr. Walton,³ illustrating by a concrete example parental incompetency, says: "Here were these children, apparently of fair, if not of average capacity, perhaps slightly dwarfed in body, shy and reserved, living with parents of vulgar self-assertion and conceit, bred out of their shiftlessness, poverty and low ambition. The children themselves were forming idle and dissolute habits, and growing up in ignorance under the corrupting influence of their natural protectors, seemingly having no proper sense of moral distinction."

¹ Our Consular reports of 1884 and 1895 of labor in foreign countries furnish very valuable and complete statistical matter on this point.

² "In every community, for various causes other than weak parents, there is a certain percentage of young orphans, which is the norm of that locality. Just what per cent. above the norm (yet undetermined) would indicate degenerate parents, can only be reached by actual observation."—Dr. W. H. Burnham.

³ Fifty-ninth Annual Report, Board of Ed., Mass., 1894-95. p. 569.

TABLE IV.
Showing Parentage, Domestic Relations, etc.

PUBLIC SCHOOL BOYS.			TRUANT SCHOOL BOYS.			HABITS.		
NATIONALITY.			HOME CONDITIONS OF 186 TRUANT SCHOOL BOYS.			TRUANT SCHOOL BOYS.		
Name.	No.	Per Ct.	No.	Per Ct.	Parental Status	No.	Per Ct.	No.
Swede,	189	30.6	1	.4	Dead,	37	20.5	7
American,	186	30.3	61	28.4	In prison,	1	-	Arrested for petty crime be-
Irish,	134	21.8	96	44.	Intemperate,	17	9.4	fore present commitment,
French Canadian,	48	7.6	24	11.	Dead,	30	11.	Used tobacco (mostly cigar-
Jew,	28	4.5	8	3.6	In prison,	7	3.8	ettes),
German,	12	1.9	3	1.3	Insane,	5	2.7	
Scotch Irish,	5	.8	2	.9	Intemperate,	7	3.8	
Scotch,	4	.6	4	1.8	Both parents dead,	10	5.5	
Dane,	2	.3	-	-	Both intemperate,	3	1.6	
Pole,	2	.3	2	.9	Separated,	1	-	
Italian,	1	.1	10	4.5	Orphans,	77	42.7	
Portuguese,	-	-	2	.9	Incomplete home,	117	65.	
Unknown,	2	.3	5	2.3				
Professional,	8	1.3	3	1.3				
Mercantile,	96	15.6	6	2.7				
Skilled,	280	45.6	85	38.9				
Unskilled,	202	32.9	102	46.7				
Unknown,	27	4.4	22	10.				
OCCUPATION.								

TABLE V.

Showing the actual mean increase in height and weight of boys of Worcester Public Schools and of Truant Schools of Massachusetts during three months and one week—Jan., Feb., March, and first week of April.

INCREASE IN WEIGHT.									INCREASE IN HEIGHT.	
PUBLIC SCHOOL BOYS.					TRUANT SCHOOL BOYS.				PUBLIC SCHOOL BOYS.	TRUANT SCHOOL BOYS.
Age.	No. of Observations.	Mean gain in Lbs.	Per cent. gained Wt.	Per cent. lost Wt.	No. of Observations.	Mean gain in Lbs.	Per cent. gained Wt.	Per cent. lost Wt.	Mean gain Inches.	Mean gain Inches.
9	55	1.00	80	20	21	1.12	85	9.5	.87	.43
10	76	.37	61	34	19	2.00	84	10.5	.87	.50
11	97	.62	71	23	30	2.25	80	13.	.75	.60
12	101	1.12	80	17	40	2.25	80	15.	.87	.75
13	86	1.37	81	17	39	1.75	87	10.	1.12	.62
14	67	2.37	77	20	14	4.17	93	7.	1.12	1.00
15	28	2.50	86	14	5	3.00	80	20.	1.25	.75

These defects of home express themselves to the child in poor food, insufficient clothing, improper hygienic conditions and oftentimes as a baneful heritage of a diseased and degenerate constitution.

It is conceded by all biologists that activity of the proper amount and kind is absolutely essential to normal growth.

De Varigny¹ has shown that the size of *Lymnola Stagnalis* varied with the amount of surface offered for its free activities. Of two vessels of equal volume, but unequal surface, the larger surface produced the larger animal. The lack of opportunities for the proper kind and amount of exercise of the truant during his public school life, both at school and at home, is very probably one cause for his inferior size. Nearly every truant enters into some form of bodily activity on leaving school. Very few ever loaf.

These several considerations indicate strongly that the inferiority of the physical proportions of the truant is caused by poor food, scanty clothing, incompetent, and oftentimes degenerate parents, and very probably a lack of proper activity.

The horizontal lines of the standard plotting paper Charts I and II, when indicating increase in weight, are read "pounds," when used to show increase in height, are read "inches." This plan of plotting facilitates the comparison of the growth in height with that of weight,

¹ De Varigny: *Experimental Evolution*, p. 79.

TABLE VI.

Table showing the relations between the increase in height and weight during three months, and the time spent in the truant school before the first series of measurements were made.

No. Obs.	Av. Age.	Time spent in School before 1st Measurements.	Gain in Weight. Pounds.	Gain in Height. Inches.	Ratio of gain in Weight to gain in Height.
15	13	1 mo. and less.	3.81	.53	7.2
16	11	2 months.	4.97	.62	8.01
10	11	3 "	4.17	.46	9.00
1	11	4 "	1.50	.75	2.00
2	13	5 "	1.50	.18	8.33
7	10	6 "	2.66	.58	4.58
8	11	7 "	1.90	.57	3.33
2	12	8 "	1.50	.62	2.42
4	11	10 "	2.68	.74	3.62
5	11	12 "	1.99	.42	4.73
1	13	13 "	2.75	2.75	1.57
3	13	15 "	1.75	1.37	1.27
41 ¹	11	2 "	4.31	.53	8.13
33 ²	11	8.7 "	2.02	.77	2.62

and exposes a significant fact already mentioned viewed from the point of arrested development. Roberts, Bowditch and others have shown, during periods over which their observations extend, that the most favored class has a mean height of about two inches greater than the industrial classes, and further, that there is an entire cessation of growth at the age of nineteen or twenty in the non-laboring classes; "while in the artisan classes growth is more uniform and extends to about the twenty-third year." This suggests that the *anlage* is originally cut out or planned to fill specifications and dimensions by growth processes, and that if the rate of growth, the building process, be retarded through a scarcity of growth material or other causes, the time for completing the structure is extended. The postponement of the crossing of the height and weight curves in the truant group until the fourteenth year finds an explanation in this theory.

¹ Average below four months.² Average for all above three months.

TABLE VII.

Showing the rate of growth of small, medium and large boys of Worcester Public Schools and Truant Schools of Massachusetts during three months and one week.

TRUANT SCHOOL BOYS.												
PUBLIC SCHOOL BOYS.												
Age.	SMALL.				MIDDLE.				LARGE.			
	No. Obs.	Mean Weight.	Gain in Weight, lbs.	Gain in Height, in.	No. Obs.	Mean Weight.	Gain in Weight, lbs.	Gain in Height, in.	No. Obs.	Mean Weight.	Gain in Weight, lbs.	Gain in Height, in.
9	18	56	1.32	.91	18	62	2.01	1.21	18	68	1.47	1.22
10	25	58	.75	1.32	25	63	.53	.98	26	74	.20	.70
11	31	62	.51	.91	32	72	.97	.96	32	78	.94	.99
12	32	68	1.26	.81	33	75	1.31	1.11	32	88	2.36	1.15
13	29	73	1.31	1.08	28	81	1.28	1.14	28	93	1.66	1.24
14	23	78	1.82	.98	22	91	2.17	1.11	22	113	2.41	1.57
15	8	90	2.47	.98	9	101	1.77	1.99	9	119	4.10	1.44
TRUANT SCHOOL BOYS.												
Age.	SMALL.				MIDDLE.				LARGE.			
	No. Obs.	Mean Weight.	Gain in Weight, lbs.	Gain in Height, in.	No. Obs.	Mean Weight.	Gain in Weight, lbs.	Gain in Height, in.	No. Obs.	Mean Weight.	Gain in Weight, lbs.	Gain in Height, in.
9	7	53	1.46	.53	7	56	2.06	.64	7	61	2.33	.87
10	6	60	.70	.78	6	63	2.91	.51	6	76	3.00	.49
11	9	62	4.19	.76	10	68	2.42	.36	10	82	1.47	.53
12	14	65	1.89	.71	13	72	1.44	.72	13	81	3.83	.96
13	13	70	1.32	.48	13	81	3.16	.68	13	92	4.22	.92
14	5	73	1.93	.71	5	89	2.55	1.02	4	99	4.43	3.18
15	-	-	-	-	5	95	1.75	.95	-	-	-	-

The results of the second series of determinations furnish additional evidence to the proposition that the truant suffers from arrested development. It has already been stated that the truant group gained more in weight and less in height during the three months than the public school growth. (Chart III.) What do these facts mean?

In interpreting these facts two things must be borne in mind: first, the physical condition of the boy before entering school; second, the treatment received at the truant schools.

From their own testimony I find that out of 160 boys only four returned directly home from school. Of the 156 that deserted both home and school, 13% went to other towns, returning home only when exhausted from fatigue and hunger, or brought back per force. Of those that remained in their own town, a portion loafed on the streets and bunked out until caught, some committed petty offenses and were immediately arrested, several sought whatever places of amusement the season of the year offered, which has already been mentioned. Every truant is brought into a justice court, from which he receives his commitment to the school—an experience not calculated to whet appetites or favor digestion.

To this may well be added the testimony of the officials of the truant schools.

One superintendent says: "Every boy that has entered this school (over two hundred) comes hungry, dirty, ragged and never free from vermin. As a consequence of these things his digestive organs are out of order, his blood poor in quality, and his nervous system under constant strain."

Another testifies "that their home comforts and influences are often of the poorest sort, making directly against the better impulses of the boy." On the other hand those who have deserted the better class of homes, shut themselves off from the immediate supplies of life, so that hunger, dirt and rags soon overtake them. Another says: "You will notice that after we have got the effects of cigarettes out of their systems, they have increased in weight rapidly."

The truant schools are models of sensible hygienic conditions. A serious effort is made to have the truant receive the full measure of these benefits. Food is abundant, well and regularly served. Regularity of habits are enforced. Hours of work, study and recreation suitable to the boys' strength and needs are provided. The situation is this: An organism more or less exhausted through lack of nutrition, unwanted acts committed by itself and others, and by fear, is suddenly transferred to an environment rationally planned to meet all its needs. Under such circumstances what ought one expect the organism to do?

The facts found concerning the truants urge the answer: that it fleshens rapidly but develops very slowly. Additional evidence is given from the following consideration: 33 boys who had spent 8.7 months in the school before the first measurement, gained an average of 2.02 pounds per boy, and .77 of an inch in height during 3 months and 1 week. (See Table VI.) The ratio of the gain in weight to the gain in height being 2.62, while 41 boys who had spent on an average 2 months in the school before the first measurement, gained an average of 4.31 lbs. per boy and .53 of an inch in height—the ratio of the gain in weight to gain in height being 8.13. The average age of each group is 11 years. In short the rate of the increase in weight and height over the period already specified, is dependent on the time in which the boys have remained in the school. The longer they remain the more nearly does their rate of growth approximate that of the public school boys.

It appears as if nature is profiting by the experience gained during

the adverse periods of the organism by laying up a superabundance of food supply at the very first opportunity. The organism becomes a sort of repository for food stuffs; but being assured that the crisis has passed, that the desert is crossed, she directs her energies to the more normal and higher processes of nutrition.

Bearing in mind the physical condition of the boy before entering the school, the sensible hygienic conditions of the schools, the dependence of the ratio of increase of weight to height to the time they remain in the school—the longer they remain the more nearly normal the ratio becomes, and also the exceeding susceptibility of the changes in weight to seasons of the year,¹ temperature and the like, are we not justified in interpreting the excessive gain in weight of the truant over the public school boy as an expression of the poor physical condition of the former responding readily to a superior environment?

What explanation is to be given to the fact that the increase-height curve of the truant falls below the increase-height curve of the public school boy? Doubtless there is a partial explanation in the fact that the period of maximum increase in weight for a given individual is not coincident with maximum increase in height. The very careful work of Malling-Hansen² on this subject shows that the body weight of boys from 9 to 15 passes through three yearly periods, a maximal, a middle and a minimal period, and that likewise there are three yearly periods in the increase in height. The maximal period for weight-growth begins in August and ends the middle of December, while the maximal period increase in height extends from the last of March to the middle of August. Schmid-Monnad³ finds likewise three yearly periods of growth in weight. The maximal period extends from August to October, middle from November to January, and minimal from February to July.

The point urged here is that variations of increase in weight occur in the normal development of the child, and that increase in weight and height are not concomitant processes for the individual. So that it appears that the small increase in height of the truants during this particular period may be partially due to the excessive gain in weight. But there is still another consideration, which is more conclusive, since it is in harmony with the general laws of growth. Porter⁴ has shown that "the comparative rate of growth of dull, mediocre and precocious children of the same sex is the same at all ages from 7 to 16 inclusive." The results of the present investigation show that the law holds true, with two exceptions, viz., at the ages 10 and 11.

The weights of each of the several ages were arranged in a continuous series, after the fashion of Galton,⁵ beginning with the smallest weight and ending in the largest. These series were each divided into three equal groups denominated, *small*, *middle* and *large*. (See Table VII.) A comparison of the averages of the increase in height of the three groups shows that the *heavier* the boy, the *greater the increase in height* for all ages except 10 in the public school group, and 10 and 11 in the truant group. The law, then, is, disregarding exceptions, the heavier the child of any age between 9 and 15 the greater the increase in height over a given period. Now, if one connects with this law the fact that the public school boy is heavier than the truant of the same age, the reason for the greater increase in height of the former over

¹ Weir Mitchell: *Fat and Blood*, p. 19.

² Malling-Hansen: *Perioden in Gewicht der Kinder und der Sonnenwärme*. Copenhagen, 1886.

³ Schmid Monnad: *Zeit. f. Schul.* pfl. No. 6, 1896, p. 318.

⁴ Porter: *Trans. of the Acad. Sci. of St. Louis*, 1893.

⁵ Galton: *Natural Inheritance*.

the latter is quite apparent, and it also furnishes additional evidence of the arrested development of the truant.

CONCLUSIONS.

Pedagogical. If the results of this investigation emphasizes any one group of facts more than another, it is the intense fondness for out-door activities and a spreadout, diffused universal interest in man and nature on the part of the child. Running away and truancy are forcible protests against the narrow and artificial methods of the school room, a rebellion against suppressed activity and a denial of free out-door life. Cannot pedagogy take a more practical account of these great fundamental instincts and activities? In this connection it is worthy of mention that the boys of the truant and reform schools of this State, that are provided with manual training and plenty of muscular exercise, have no desire to escape from these schools. The instructor of Sloyd in the Lyman Reform School,¹ says: "During the year not a boy belonging to the Sloyd classes has attempted to escape from the school." This is all the more instructive when it is remembered that 4.8% of the 144 boys of that school did escape during the school year 1895-96. One superintendent says: "They take the greatest interest and delight in owning and cultivating a truck patch or garden." In two of the truant schools book instruction occupies but 3 hours during the day. The rest of the day is given up to manual training, in-door and out-door work and play. The principals informed the writer that many of these boys returned to the public schools ahead of the grade corresponding to their age. They had gained a grade.

The observations and conclusions of Richardson² are instructive at this point—he says: "It may be stated generally that the psychological limits of the capacity of attention and of profitable mental labor is about one-half the common school time of children, and that beyond that limit instruction is profitless. The following is one of the several illustrations cited by Richardson in support of his proposition: "In one large establishment, containing about six hundred children, half girls and half boys, the means of industrial occupation were gained for the girls before any were obtained for the boys. The girls were, therefore, put upon half-time tuition, *i. e.*, their time of book instruction was reduced from 36 hours to 18 hours per week, given on the alternate days of their industrial occupation, the boys remaining at full school time of 36 hours per week—the teaching being the same, and the same system and by the same teachers. . . . On the periodical examination of this school, surprise was expressed by the inspector at finding how much more alert, mentally, the girls were than the boys, and how much advanced in book attainments. Subsequently industrial occupation was found for the boys, when their time of book instruction was reduced from 36 hours a week to 18; and after a while the boys were proud, upon examination, to have obtained their previous relative position, which was in advance of the girls. The chief circumstances effecting this result, as respect the boys, was the introduction of active bodily exercise, the naval and the military drill, and the reduction of the duration of the school teaching to within what appears to me to be the psychological limits of the capacity of voluntary attention."

Every one admits that our instruction should begin just where we find the child. In fact it *must* begin there if we would teach. But where and what is the child world? Of what is it composed? To

¹ Second Annual Report Lyman and Industrial Schools, 1896.

² Richardson, B. W.: National Health, pp. 99-104.

get acquainted with the psychic world of animals biologists study their activities, their desires, their fears, etc. Can we do any better in getting acquainted with child life than to follow the example of the biologist? If pedagogy adopts such tactics what disposition must it make of the activities, interests, desires, emotions, etc., expressed by the child in the present investigation? Has fondness for water, for fields and woods, for plays and activities, *not supervised*, the period of focusing down of interests, of forming attachments for certain objects and persons, the period of lying, stealing, and hardness, and of checking up in physical development any lessons for pedagogy? Are we instructed by an active child saying: "I disliked to go to school *every* day," or "It was too fine out doors to stay in school," or "I disliked to stay in school *five* hours," or "I liked the fire drill," or "It was *hard* for me at home and at school," or, "I liked the gymnastics at school?" The large per cent. of truants defective in sight and hearing is a fact that urges most strongly the necessity of teachers having a definite knowledge, gained by actual tests, of the strength of these most illuminating "windows of the soul." There should be no excuse for the modern teacher's guessing and blundering over such matters when a little time, with very simple apparatus, would yield sufficient data for intelligent action.

Sociological. The intimate correlation between the child's home comforts and its emotional and ethical life suggests some very fundamental questions concerning the connection between property and good citizenship.

Renewed emphasis is given to the old old fact that the wholesome influence of the home rests solely on the physical and mental vigor and integrity of the parent. The fact that so many of the truants (98%) do not return home, exchanging readily its comforts for hunger, bunking out, stealing, breaking and entering, and the like, indicate two things, first that their homes have a minimal attractiveness and power over their lives, and second, that their moral sense, self-respect and ambition are greatly wanting, since they abandon themselves so readily to more primitive forms of civilization. Morrison¹ says: "In very early life unadaptability to social surroundings usually shows itself in the shape of truancy, vagrancy, wandering habits, in short a disposition to revert to the nomadic stage of civilization. The greater the demand made by society on the child, such as the demand in the present century that he shall regularly attend an elementary school, the more clearly is the extent of the nomadic instinct brought to light. Of course, in all cases where parental supervision is of an efficient character, the wandering impulse is usually corrected and extinguished, but when there is little or no parental supervision, a child of nomadic tendencies is apt to be picked up by the police as a vagrant." Interpreted biologically, and in accord with the assumptions and experimental evidence already brought forward, either the metabolic rate of the organism is not keyed to respond advantageously to the increasing stimuli of its environment, or a portion of the stimuli necessary to support the rate of metabolism is absent, the former being due, doubtless, to heredity, the latter to insufficient nutrition; but in either case the organism moves half instinctively half purposely about for conditions in attune with its rate of metabolism or for conditions necessary to support that rate that is essential to well being. }

Psychological. What does such an investigation contribute to the psychologist? To the writer it seems his gain depends largely upon his point of view.

¹ Morrison: Juvenile Offenders, p. 58.

Every geologist of repute, since Lyell, defends the thesis that the present geological forces are the same in kind as those that brought our earth out of primeval chaos and made it possible for organic existence. The modern geologist observes carefully the operation of pressure, heat and cold, wind and rain on our present land forms, and from the facts here gained explains the processes of mountain, plain and valley building; in short, traces out the causes that have produced the manifold land forms of earth. This is practically the view and method that guides the investigation of the genetic psychologist. Observe, for a while at least, those forces which we have reason to believe have from the beginning of organic life been instrumental in differentiating the activities of the psyche, that have impressed upon the soul some of its deepest instincts and tendencies.

The results of this article, surveyed with these general notions in mind, are more suggestive than otherwise to the psychologist. A few of the more prominent suggestions and problems are here given.

The discarding foot and head dress and garments by the little runaways (case 9, II, group of runaways) is certainly suggestive of an effort, blind of course, to realize the conditions enjoyed by primitive man in chase and flight. The intense longing and fondness of the child for out doors and water is in excess of any desire that might have been formed out of individual experience. The various forms of shelter enjoyed at present, even the very best, are so recent in the history of the race, that to the child, and even to the adult, are not entirely free from caginess. The behavior of animals in captivity is an interesting background to this subject. The differentiation of the water psychoses has gone on continuously since the beginning of life. In fact the whole of the anatomical ground plan, and much of the details of the vertebrate series were worked out while life still moved in a water medium. But even after migrating to the land, it has ever been compelled to make daily visits to bodies of water. For primitive man to wander too far from streams of water was to suffer, if not to perish from thirst. He sought streams for their fish, lay in ambush along their banks to capture animals that came to slack their thirst. Early travellers and wandering tribes cast their tents beside a stream of water. In modern times many of the ills of man are relieved by a great variety of water cures. Certain forms of madness are detected by pouring water before the unfortunate. In view of all these things should we wonder at the water psychosis so pronounced in childhood?

The peculiar mental and bodily state induced by the sudden loss of direction and the sudden realization of being alone, while running away, may have some connection with that sense of helplessness and defencelessness that comes over all gregarious creatures when suddenly separated from their companions or natural protectors. The lost cry note of the chick, the turkey, the wild goose, the behavior of the dog when lost from his master, the distress of the horse at the separation from a mate, all testify to the profound effect that loneliness has even on lower creatures. The child, which a moment before had no regard for home, companions, or any fear of whatever obstacles it might meet, is suddenly transformed into a timid, inactive, powerless creature. Volition is gone, movements are without precision. There is a folding up, a shrinkage of the soul in the presence of an unknown and unfriendly environment.

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therefore, owes a great debt of gratitude to the officials and teachers of the truant schools of this and other States for their cheerful and ready co-operation.

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L. W. K.

CHILD FETICHES.

By GEORGE M. GOULD, M. D., of Philadelphia.

It is now an almost trite and over-emphasized truism that "the ontogeny repeats the phylogeny," and we have heard much concerning this fact as regards child study. But, so far as I have been able to learn, the subject of the persistence or inheritance of fetichistic habits in children has but little or not at all attracted the attention of students or observers. And yet it is a fact that most every intelligent parent or child-lover must have seen or negligently passed over. The data adduced in the excellent study of Dolls, by A. Caswell Ellis and G. Stanley Hall (*THE PEDAGOGICAL SEMINARY*, Vol. IV, No. 2), although allied, are by no means psychologically identical with those of the phenomena I shall illustrate, and in some respects are quite dissimilar. Some phases of doll psychology doubtless tend to fetichism, but so long as the doll is, properly speaking, a veritable doll, it is an object of affection, and its existence flows directly or indirectly from the reproductive instinct. The savage's fetich, however, is not born of this instinct, and many children exhibit characteristics which can only legitimately be connected with the fetich worship of primitive peoples. The following instances are either personally known to me or are vouched for by friends whose report I can trust.

Case I. A. M. was three years of age, when one day his father, who is a wealthy gentleman, told him that among some of his poor tenants there was a little boy whose name was Joe Dean, who was a bad little boy and did all those things that children do who are not rightly brought up, and such as he was sure his child would never do. At once this Joe Dean became associated in the child's life with all that was evil. Little A. was not a bad boy, but would indulge in fits of perverseness, such as any child might have who preferred his own way rather than that of the parent. When these naughty times came on him he would then say he was Joe Dean, and retiring to an adjacent room, he would close the door, and his mother would hear him stamping and shouting and bidding Joe Dean go away. Soon he would return with the tears all dried up and a bright, smiling face, assuring his mother that Joe Dean had gone, and that her good boy A. was with her once more. This habit was continued until he was 6 years old. One day, after his father and uncle had returned from the city, he quietly said, "I want all of you after dinner to come out on the lawn to a funeral;" they said "whose funeral?" "Never mind," he said, "I'll show you." With anxiety they waited the time set by the little boy, when on going to the lawn, they found he had dug a little grave, and beside it was a small piece of round wood about the length of the grave. This he told them was Joe Dean, and he was going to bury him, and that would be the end of the bad boy. He had taken one of his aunts into his confidence, and had her write on a piece of paper the following epitaph, which, after the grave was filled up and supplied with a small white pine head stone and a foot stone, was spread out on the grave; it was found to contain these words: "Here lies the body of Joe Dean, never to come to life again." (It is the family belief that the words were of his own prompting.) From

that moment the fits of anger and freaks of disobedience disappeared. His whole nature changed, and up to the present time, when 13 years of age, he has never been in such a state of mind that the character of Joe Dean could be associated with his daily life.

Somewhat similar to the foregoing is the following :

Case II. When about two years of age, D. assumed a second self, who was ever present with her in angry moods, and on retiring to the corner of the room, or to an adjacent room, D. would actively shake her skirts and bid "Sarah Jane" begone. "Get out, Sarah Jane!" she would say, and in a few seconds all the cloud of anger, crying, and fretfulness would disappear. One day she returned from Sunday School and told her grandmother that she had met a lovely girl there whose name was Hossie Grafell. Upon further questioning her at that time, it was found, according to her report, that Hossie Grafell's mother was living, and that her father was dead, and that she was an only child, and that she didn't say what D. said. When asked to explain, she replied: "I say I won't go to bed," but Hossie Grafell says, "I would rather not go to bed." A former nurse girl, without our knowledge, had taught her to say, "You nasty thing." She said Hossie Grafell would not say that. Hossie Grafell was a dear child, and only said the things which pleased her mother. So D. assumed that when she was good, she was "Hossie Grafell," and when she was bad, she was "Sarah Jane." This was continued for several years. It is needless to add that Hossie Grafell was a pure myth.

Case III. N. O. is a boy at present eight years of age. From earliest infancy he has constantly kept by him "Bowsy," a little Canton flannel stuffed dog, about six inches high, with bead eyes, straight tail, and four stiff legs. Up to two or three years ago he would never be without this companion for an instant, but carried it in all of his plays, from the time that he would wake up until he went to sleep. Some two or three years ago he quit carrying it constantly in the day time, but never would go to bed without it. It has been forgotten several times in travelling, and the child's grief was so great, and the danger of producing illness so apparent, that it had to be shipped to him at once. No similarly made doll or effigy would do, and the mother has had to be very careful to have a duplicate on hand all the time in case of loss of the original, but the duplicate is made with scrupulous care, so accurately like the old as to deceive the child; at least he always pretends to think it the same one. Sometimes when it has been impossible to get the original or duplicate, the child has only gone to sleep, at nights, after long crying and sobbing. About two years ago he became somewhat sensitive about the habit, fearing that others would ridicule him, but at the present time he shows no sensitiveness whatever upon the subject, although the parents and servants are careful not to ridicule him. Neither the parents or his little sister by action or word, either of encouragement or discouragement, have seemed to have any influence upon his addiction to "Bowsy." A year or two ago his mother made a dog exactly similar to the old one, but with a curled tail instead of a straight one. He accepted this addition to the family, but frankly stated that he did not care anything for this dog, that it should not be called "Bowsy," but might be called "Browney," and might, if it pleased, go to bed with him, following after "Bowsy."

I think the two following instances, when carefully scrutinized, will also be recognized as having a different psychologic origin from that of doll-loving.

Case IV. "A. P., when an infant, was weak, and was always wrapped up in blankets. She selected one certain blanket and would never go to sleep without it. She personified it by the name of "Esther," and

always regarded this blanket with a kind of affection and had a sort of companionship with it. As she grew older the blanket shrunk until it was so small that she could only lay it up to her face, and, as it were, breathe through it. She took it to boarding school, and her companions could not shame her out of going to sleep with it. At the age of eighteen she went to Europe, making a trip up the Rhine and to Switzerland, etc., with a party of school companions; the blanket was always with her at night. At a fashionable boarding school it was likewise her companion. The last time I saw this blanket it was about the size of a large pocket handkerchief, yellow and much darned. Miss P. has always been able to find it in the dark by the feel of it, and to distinguish it from other flannel by its own peculiar odor. It is as well beloved as ever, although Miss P. is now twenty-seven years old."

Case V. A cousin of A. P., when a little boy, was accustomed to put himself to sleep by rubbing the back of his hand on the starched and tucked end of the pillow slip with which his crib was provided. He was pleased with its smooth feeling and coolness, and would not go to sleep in any position in which he could not move his hand gently to and fro over the starched and ironed surface. This sort of pillow slip was carried when travelling, and his mother was careful to have such slips taken to the country home. His devotion to these peculiar pillow cases was such that when going to school he insisted on taking them from home, and declared that it was impossible for him to sleep soundly without them. He invariably went to sleep by rubbing the back of his hand gently to and fro over the hard, smooth surface of the tucks and hem. The last heard of him was when he was about fourteen or fifteen years old.

Case VI. F. J. was an intelligent and perhaps neurotic girl of seventeen or eighteen. As long as she could remember she had been accustomed before retiring to give some object in her sleeping room three caresses or pats. When she got into bed without doing this she felt compelled to rise and do it before she could go to sleep. The object was always some pleasing thing, such as a vase, a picture, a box, or bit of furniture. When she occupied the same room for a long time the object to be patted was changed occasionally, according to her whim, but was not changed each night. She would often choose one thing for months together. When away from home or travelling, on entering the room which was to be her sleeping room for the first time, she always unconsciously made a mental selection of the thing that was to receive the three pats.

Case VII. F. B., from early childhood, has been in the habit of using a peacock feather or whip-lash dangled over a shut book to aid her in a method of self-amusement. The feather was first employed, but when this was broken by usage a small whip with a limp lash took its place. Several such whips were used up during the years of her childhood. The end of the lash was held fluttering over the Kate Greenaway figures of a closed picture-book, and with the eyes directed to the figures or the whip-lash, the child would talk to herself by the hour. One might suppose this to have been a kind of self-hypnosis and perhaps implying a morbid habit of mind, but the child was perfectly normal-minded in all other respects, healthy, and happy, and when carrying on this soliloquy was not hypnotized or "entranced" and apparently was as natural as a child when playing alone and chattering to itself or to a doll. She preferred to carry on this procedure when alone or at least when unobserved, and would not do it at all when strangers were present. The soliloquies when overheard by the parents or her sister were very interesting and peculiar. They were

in early childhood almost invariably metrical and rhymed, and if a rhyme did not come pat, one was made whether it was a real word or not and also regardless of the sense. Usually there was a thread of narrative or of logical sequence more or less clearly running through the jingle. After a few years the child stopped versifying and rhyming and told fairy stories and all sorts of tales to herself, the whip-dangling never failing. The parents describe these stories as partaking of the *style* but never of the *matter* of the fairy tale or story book last read. All the incidents, names, etc., etc., were original and never an echo or memory of the story read by herself or to her. There was never any tendency to indulge in this amusement to excess, and as her (very intelligent) parents were alert to watch for any evidence of morbid mental action and yet failed to detect such, she was allowed to continue the habit almost daily until the child was about fourteen years of age. A physician then advised that it be gradually discouraged, and this was successfully done, though even at the present time when she is over twenty years of age, a bright and intelligent woman, she likes occasionally to soliloquize by the aid of something held quiveringly over her book.

Case VIII. Dr. H.'s two daughters (now grown up young ladies), from the age of five or six to about ten or twelve, had a smooth, oblong stone about six inches in diameter, with which they always played and would never let it be thrown away. They called it "Tom Stone" and carried it about in a baby carriage, but did not think of it at all as a doll, and their remembrance of it to-day is clear that they did not have such feelings toward it as children have towards dolls; they never dressed it up as a doll. One of the interesting things about their feeling toward "Tom Stone" was that they constantly put it into the sunshine to get warm. They are now unable to determine whether or not this was done to make the stone happier by the warmth or whether the warmth felt more comfortable to the hands.

Case IX. Two ladies tell me that when children they formed among themselves what they called a "missionary society" for mice. Miss H. had kept about her body for a year a little white mouse. It would nestle in her sleeve, in the waist of her dress, etc., all the time. After the death of this white mouse the girls formed the "missionary society" so-called, in which, without the knowledge of the mother, they fed mice secretly, until finally Mrs. H. found her house infested with mice, and had to set traps, in which over 30 were caught.

Miscellaneous Cases. Miss H. had a stump some distance from the house, of which she was very fond. For a year or two she would constantly visit this stump and sit by it whenever possible. She was greatly grieved when this stump was pulled up.

Mr. R., now 40 years of age, has a piece of flannel blanket which he has kept since childhood, and always demands it when he is ill or when he gets hurt, calling it "his baby." He is really miserable when ill, if he does not have it, and when he was hurt and taken to a hospital, he actually sent home and got it.

Mr. H., when a boy, always twirled and curled the corner of the blanket on going to sleep.

I know of a lady who preserved two old spools, with a string in them, with which she used to play when a baby, and although now a married woman, keeps them in the upper drawer where she can look at them occasionally.

Miss H. has always been attached to a little down pillow with a long cover. She is, to-day, a girl of 20 years of age, and yet protests that "it feels better than any other pillow she ever had." She now always carries it away to school with her when she goes.

A little child of 4, in a hospital, who had never been able to play with a hoop, secured the wooden hoop of an old keg and kept this about its neck all the time.

It appears evident to me that the foregoing histories are not instances of inheritance or atavism, but, like many things thus classified, they are simply instances of *de novo* productions and habits which have arisen from precisely the same causes and conditions as similar ones in the adults of savage peoples. One might philosophize at much length upon their *raison d'être* without exhausting the suggestions aroused, and perhaps not exactly hitting upon the true explanations. I take it that very often the fundamental reason of origin may be the need of the mental mechanism of these jelly-like developing beings to objectify psychic things or habits in order to intensify and realize them. Materialization, real or vigorously assumed, is necessary to give a sense of validity and reality, and, as it were, to etch deeper into the mobile protoplasmic substratum of thought and feeling.

Perhaps, also, the loneliness and alienation which grieves all of us, the isolation which is a necessity of individuation, is dumbly and dimly felt by these young exotics, and the hunger for companionship becomes manifest in fetichistic habits.

Often, too, many mixed motives compete or complete. We smile when a simple mind thinks his watch superior to that of others, and in the child the beginnings of the egotism of possession are naively shown in fancied superiority of any chance object selected. It has been contended that much religion or theology has its origin in the pride of belief in the superiority of the tribal or national god over that of the despised neighbor.

Once established, of course, the habit intensifies itself by mere repetition.

Almost every writer defines fetichism according to the teleologic bias of his mind. The toplofty definition of Comte was framed to prove his theory of the triple stages of human development. Lubbock's ideas of it as a method of constraining the deities to comply with desire seems also to do violence to the facts, and even the conception of Tylor appears to give the savage too much intention and self-consciousness. In many types mere habit, or satisfaction with the familiar, is quite sufficient to account for the beginnings, and for much of the continuance, of the love or use of an object or of persistence in a method of action on the part of primitive minds. We should not import into these mobile unformed psychic mechanisms our own habits of self-consciousness and purposiveness. Every negro servant at his or her work objectifies some person there in the air, converses with the imagined one, and even "gets mad" at him. Charms and talismans indicate quite as often mere satisfaction in familiarity, repetition of touch, etc., as they do any desire for things obtainable through the object. The child is also most loyal and doubtless feels some compunction of conscience in failure of faith even to a toy, to an imagined other, or in neglect of an oft-repeated manner or method of action. Even agreeableness to the touch of an object may undoubtedly influence the adult judgment and determine weighty affairs of life. We need only a more subtle and discriminating observation of the unnoticed reasons for our own prejudices, likes and dislikes, to be able to comprehend the most obstinate fetichisms and superstitions of the plastic mind of the child.

SOME REMARKS ON THE PSYCHOLOGY OF NUMBER.

By Professor JOHN DEWEY.

In the October, 1897, number of *THE PEDAGOGICAL SEMINARY* Mr. D. E. Phillips has presented a very considerable bulk of data bearing upon the question of the development of the number sense, from the standpoints both of experimentation and collection of illustrative material from child life. He has also presented a theory in interpretation of these facts. This theory, as I understand it, separates the counting process, in which number undoubtedly has its origin and development, from the consciousness of quantity, holding that the number idea in the form of a series, is a distinct process psychologically and pedagogically from the ratio idea; or, as it is stated in the summary on page 277, "Number as measurement is not the whole of the development of number but only the complimentary side of the series idea; number as measurement can by no means explain all the mental phenomena of numbers."

The matter has, I think, sufficient psychological interest of its own to justify further consideration; and this consideration is specially urgent when we note that according as we separate the counting or series idea from the quantity idea, or connect it organically with the latter, we get two quite different educational procedures indicated. I propose, accordingly, a further discussion of the matter, based for the most part upon Mr. Phillips own data and treatment.

The first point which appears to require examination is the question of the origin and development of the series idea, both in the concrete and the abstract. At the outset I experience considerable embarrassment in interpreting Mr. Phillips's statement (page 234) that "nearly all children, no matter how taught, first learn to count independently of objects, in which the series idea gets ahead," or again (page 236) "That the naming of the series generally goes in advance of the application to things." My difficulty is in understanding what Mr. Phillips means by the "naming of the series." His argument demands that this naming of the number series be genuine counting or enumeration; the facts which he educes in support of his proposition relate to the mere repetition or rattling off of a series of number *names*. I find it difficult to convince myself that Mr. Phillips has not distinguished between two such totally different matters as naming a number series and repeating a series of names of numbers: but careful reading of his paper has not assured me that he is free from this confusion. For example on page 231 it is said: "M knew number names long before numbers themselves, and applied them to anything indiscriminately, the numbers seldom agreeing with the number of objects," Page 232: "Have children of the kindergarten count, and you will find that they leave out the difficult names and carry on the series the same, often repeating without being conscious of it "M— When learning to count things or impressions, would count eight, nine, for one object. The number series always get ahead." "This child learned the figures in order; *i. e.*, 1, 2, 3, 4. He could tell them in this way up to forty, but if they were changed around he would not know but what it meant the same. He associated number with place or order only." "Most children I have taught," says an experienced teacher, "*will* learn the names in-

dependent of things. For sometimes they do not associate them as how many of anything, but merely the name of the series." "Children learn number names as they learn other words, by hearing them repeated. They use them without knowing their respective values. They apply them promiscuously calling three objects ten as the case may be. Very frequently they have the idea that the number name belongs to the object in whatever order among others it is placed." (Italics mine.) A number of other instances could be quoted, but it is probably enough to refer to the summary of data on page 249, where it is stated that three hundred and fourteen out of three hundred and forty-one returns say that children learn *number names by rote as an abstract word.* (Italics mine.)

While, I repeat, it hardly seems credible that Mr. Phillips could confuse counting with the repetition of number names, yet the foregoing quotations, which might be largely multiplied, point in this direction. It must be borne in mind that these statements are not isolated, but are the substance of the evidence adduced by Mr. Phillips to show that the formation of the number series precedes the application of number to objects. It is hardly necessary, I suppose, to argue that since this supposed evidence refers in reality only to the learning of certain words, it is just as irrelevant to the proof of Mr. Phillips's proposition, as would be the evidence that children learn to say the alphabet before they count objects. The repetition of number names is no more counting than is the saying of counting out rhymes like: "Eeny, meeny, mony, mi," etc., in fact, hardly as much so, for in the latter there is a genuine pairing off, or crude equating which approaches the number concept. It is barely conceivable that Mr. Phillips does not mean to attribute any numerical significance to this saying of number terms (though if such is the case, I utterly fail to see why it should be exhibited as indicating that counting goes in advance of application of number to things), but merely means to indicate the satisfaction which the child takes in any series or succession. I do not doubt this latter fact at all, nor do I doubt that interesting psychological results could be got from a careful study of the child's delight in successive recurrences. One group of Chicago kindergartners, for example, has been making a careful study of this matter and finds the child's interest in statements of: "This is the house that Jack built" type, so strong that a large number of rhymes and stories along similar lines have been constructed to the children's eminent satisfaction. Nor do I doubt that such phenomena are indirectly relevant to the psychology of number; but it must be clearly recognized that such facts have absolutely no power in support of the statement that genuine counting or formation of a real number series precedes the application of number to things, which is the point in question. Moreover, so far as these facts have any connection with the number sense at all, the essential thing is to see under what circumstances the mere interest in seriality of repetition becomes transformed into an interest in that particular form of seriality which we term counting. To confuse series interest in general with the series interest in its counted off form, is about as flagrant a case of the fallacy of accident as one could imagine.

This brings us to the question which is of fundamental importance. What is the origin and significance of the interest in series and succession? Secondly, under what circumstances does this assume the numerical form? I begin with the first point. Mr. Phillips's Psychology of Succession seems to me somewhat unnecessarily crude. On page 231 he says: "Succession of some kind is the earliest and most continuous thing in consciousness. Series, of innervations, touches,

sounds, sights, etc., are the constant things in consciousness; one series only gives way to another." Pages 227, 228: "Changes in consciousness are continually taking place produced by the varying impressions from all the senses. Consciousness is not one continuous impression, but an innumerable multitude of successive changes. . . . As already stated, without doubt different senses contribute to these ideas." Page 229: "The series idea is established by a multitude of successive and rhythmical sensations conveyed through the different senses."

I call this psychology crude because it seems to confuse the *de facto* occurrence of changes in consciousness with a consciousness of such changes, this latter being necessary to any consciousness of a series; and because it implies that sensations, simply as sensations, come to us, individualizing themselves, and also arranged in series. Now one cannot, intelligently, watch a baby for fifteen minutes without seeing that there is a very great difference between distinctness and orderly sequence in sense *stimuli* and definiteness and sequence in *conscious* sensation. It is a matter of great difficulty, requiring several months of infant life to secure ability to pick out a distinct sound, color, touch, or taste at all. The child's consciousness certainly begins with a sense blur or confusion into which specification is only gradually introduced.

Instead, then, of taking for granted the existence of a series, supposing that it is adequately motivated by the mere occurrence of different sensations, we have to discover the principle through which the original blur is specified into definite states of consciousness, and these serially ordered with reference to each other. Of course an adequate discussion of this point is out of the question here, but, in order that we may have an idea of the origin of succession to put beside Mr. Phillips's, I would make the following statement: It is the motor reaction or process of adjustment which breaks up the sensory blur into definite states, and it is the continuity of motor adjustment (corresponding to habit) which arranges these into a series. Fortunately for our discussion all the evidence that Mr. Phillips brings up points in this direction. For example, page 229: The cases given of "reproducing or following a series" are all motor. It is not mere having of sensations; it is throwing, repeating strokes with the clock, rolling mud balls, nodding the head, arranging pebbles, etc. On page 233, it is expressly stated: "A movement of some muscle, as the toe or finger, or nodding of the head, can be observed in nearly all children when counting at first." On page 234, instances of such motor reaction are given; also on page 249, under the caption of "Tallying by Beats;" on 250, in Miss Shinn's valuable record, things were enumerated by touching them, taking nuts out of a box, transferring objects: and once more on page 252; so also page 254. So striking is the evidence, that Mr. Phillips himself, in his final summary of conclusions on page 277, says: "Some movement is perhaps unavoidable in the early stages of counting. If the motor element be a necessity of all thought it is even more so in following an abstract series." The term "following" perhaps throws some light on Mr. Phillips's confusion. It seems to indicate that the series is already there and that the movement simply parallels the members of the series as they come and go. But this confuses the adult standpoint with the child's. The child *makes* the series *by* the movements: that is to say, by movement he interrupts the vague continuum and introduces definiteness or individuality.

We thus get a basis for interpreting the importance (which Mr. Phillips does well in emphasizing) of rhythm in the formation of an orderly series. This subject is also of course too large to go into, but

Dr. Bolton's important investigations may be referred to. One passage given on page 224 may be quoted: "The subjects were found to be unconsciously keeping time by tapping, nodding, etc., at every second or fourth click. When movement was restrained in one muscle it was likely to appear elsewhere. These *movements* are the condition of rhythmical grouping." It is the grouping of minor movements within a larger whole of movement which marks off a mere on-going series into those regular recurrences of stress and slur which make up what we call rhythm.

When interpreted, Mr. Phillips's own data confirm the statement quoted by him from McLellan and Dewey's "Psychology of Number" "That number is to be traced . . . back to *adjustment of activity*." (Page 252.) This is the point worked out in considerable detail in chapter 3, pages 35 to 44 of that book. Perhaps this is as fitting a place as any to say something about the rational factor in number. Mr. Phillips objects to the doctrine of the Psychology of Number (see his pages 243, 244) on the ground that it makes altogether too much of the rational processes of abstraction and generalization, and altogether too little of the instinctive, unreflective side. I shall not charge Mr. Phillips with lack of candor; but either the statement in the book is so confused and obscure that the point is not plainly made, or else Mr. Phillips has read it somewhat carelessly. He certainly is bound, in making his objection, to use the terms abstraction and generalization in the same sense in which they are used by the authors in question. However defective the statement may be, the point is certainly insisted upon that *practical* activity precedes the rational in the *conscious* sense of the latter term; it is pointed out that abstraction first exists practically in simple selection or preference as to ends and means, and that generalization is of the same practical sort, consisting in the adjustment of means to ends; and that only at a later period does this practical selection and adjustment come to consciousness in explicit rational form. The whole moral of the book pedagogically, so far as primary number is concerned, might be said to be this: "Do not teach number either merely mechanically or merely rationally. Give the child something to do which involves the use of numerical considerations in a reasonable related way. Thus he will gain practical familiarity with them, by using them for some purpose and end, instead of in a meaningless, haphazard way, will be forming orderly practical habits of relating, which afterwards will become conscious in real generalization." I quote from page 30 of the book referred to: "The child may and should perform many operations and reach definite results by *implicitly using the ideas* they (that is numbers) involve, long before these ideas can be explicitly developed in consciousness. If facts are presented in their proper connection, as stimulating and directing the primary mental activities, the child is slowly but surely feeling his way towards a conscious recognition of the nature of the process. This unconscious growth towards a reflective grasp of number relations is seriously retarded by untimely analysis."

In view of these facts, and in view of the fact that Mr. Phillips himself, finds the origin of the series in a purely objective basis—the occurrence of sensations, while McLellan and Dewey find it in a practical basis—motor reactions, it seems to me that I am not unreasonable in feeling that Mr. Phillips ought to have welcomed these authors as allies, and as providing a scientific support for his own contention (otherwise unproved) regarding the relation between the spontaneous and the conscious phases of number processes, instead of turning his guns upon them to the extent of two or three of his valuable pages.¹

¹ There seems to be reason for supposing that Mr. Phillips has been led

We now turn from the consideration of the series in general to that particular form of the series which we call counting. We have already disposed of the confusion between counting process and the mere repetition of number names and hence are ready to deal with the former question proper. In order to define the problem I may refer to an apparent misconstruction by Mr. Phillips of the doctrine of the "Psychology of Number." On pages 227, 243, 267, 273, 274, he implies or states that the ratio idea is insisted upon in that book to the exclusion of the series idea, or at least to the very great subordination of the counting process. Nothing could be further from the mark. The doctrine of that work is that the counting process (the series idea) and the quantitative or magnitude idea, are logically correlative, hence the ratio idea. To subordinate the series (how many) to magnitude idea (how much) would destroy ratio, not exalt it. On page 145 of that book it is stated that counting is the fundamental process of arithmetic. On pages 163, 165 the necessity of the counting process proceeding from the mechanical to the intelligent counting, is expressly insisted upon. So again on pages 44 to 51. In fact it is hardly worth while to give specific quotations. The characteristic theory of the book is the emphasis laid upon the principle that counting, the formation of the series, and measuring go together. More than this it is expressly stated both in the theoretical and the practical part that the numbering process or formation of a series, *comes to consciousness* first, and that ratio, *as a conscious idea*, is a later outcome (here, once more, is a difference between Speer's method and that of the book in question).

I do not mention this for the sake of justifying the book, although if Mr. Phillips has gone so far astray in understanding it, it is possible that others have also. I mention it for its value in helping define the real question. This is not whether counting precedes or follows the ratio idea; but what is the *use* or value of the counting process? What is its *motive*? *Why* do we count? I doubt if anybody would go to the point of absurdity of developing an arithmetical method which omitted the counting side. Number *as* number *is* enumeration. Certainly Mr. Speer, with all the emphasis thrown upon conscious comparison of magnitudes and the statement of result in ratio form, has used counting in the definition of the ratio—my objection being simply that he does not emphasize sufficiently this counting or discrete factor. But the important question, both psychologically and pedagogically is: How shall we *utilize* the counting process? Shall we isolate it, or shall we treat it as having a function in the definition of value? This is all there is to the whole question.

astray by identifying the principles of these authors with that of Mr. Speer—a procedure which is not just on either side. Mr. Speer is entitled to full claim to originality of method as far as Dewey and McLellan are concerned. It is not just to him to consider his book simply an application of the theory of the "Psychology of Number," nor is it just to the authors of that book to interpret their theory simply in the light of Mr. Speer's practice. There is one fundamental point, I am happy to say, upon which we are in complete accord, that is the correspondence between the number idea and the quantity idea. But both the theory and practice of handling this point are very different. Mr. Speer's method, comparatively speaking, emphasizes the how much or continuity side at the expense of the discrete or how many side; and the two books interpret the conception of relation in very different ways. To Mr. Speer, relating means (upon the whole) intellectual comparison: to the authors of the "Psychology of Number" relating means, primarily, practical adjustment. On page 244, Mr. Phillips quotes a sentence from the "Psychology of Number" and in the same connection, as if it bore upon its interpretation, makes the following quotation: "Reasoning in arithmetic establishes equality of relation. Reasoning in any subject, equality or likeness of relations." This latter sentence is quoted from Mr. Speer. It would be pedantic to make a moral issue of this, but I should like to know by what rule of criticism one is justified in quoting from one author to interpret another. As matter of fact, this statement is quite unlike the doctrine of "Psychology of Number."

I will now state my conception of the origin and development of the counting process, comparing this statement from time to time with that given by Mr. Phillips. My general conception is as follows: At the outset the child learns to count (in the genuine sense as distinct from the mere repetition of a mere lot of words) by *reference* to separate things making up a vague totality. If we take the facts preceding conscious counting, this is evident. The child keeps tally by some movement of his own with some objective fact or event; he equates, so to speak, an action of his own with some action outside of himself. All the evidence that can be educed with reference to the formation of system to number names points the same way—the connection between counting and the toes, fingers, hands, etc. So also does the connection of number with space—noted by Mr. Phillips himself. It is equally evidenced by observation of children in cases of learning to count as distinct once more, from saying number names. I am glad to refer to Miss Shinn's record which completely bears out (though in considerably greater detail than my own) observations which I have made upon three children. For a considerable period there is interest in marking off objects by pairs, one against the other. During this period the idea of two is understood, that of one and the other, but nothing beyond. While this pairing off was marked from sixteen months onward as late as the twenty-eighth month, three could not be counted. Mr. Phillips gives a good deal of concrete data bearing out the statement made in the "Psychology of Number" that counting involves the *ordinal* idea as well as the cardinal, evidence taking the form that the child will identify a given number like three or four with a particular stick or object. In one of my own observations in teaching a girl of three to count upon her hands, in beginning with the thumb it was numbered one. The next time beginning with the little finger the thumb was called five, whereupon she insisted that it was one. This confusion continued for a few days, when the child spontaneously remarked: "Why, you can begin at either end." Up to this time she had never been certain with reference to three; after this she counted intelligently up to ten.

But it hardly seems worth while to go over the specific evidence. The moment one ceases to confuse counting with repetition of number names the proposition that we learn to count, irrespective to application to things, becomes absolutely meaningless. When we count we surely count something. The difficulty in learning to count is the difficulty of distinguishing relations of order from those of mere place or form (see for example the cases on page 242 of Mr. Phillips's article, in which cases of the confusion of form and number are given; so also pages 248, 249.) So great is this demand for something to count, that I have known of a number of children who have reached the period of spontaneous counting who insisted upon saying one one, two ones, three ones, four ones, and so on, and were quite confused when the number was given to them simply as an aggregate. In one case I remember a child of four, who, when something was said to her about seven, was at first confused, and then spontaneously said: "O, I suppose you mean seven ones." Both the positive evidence, then, and the negative (that is the difficulties which children have in learning to count) show that counting arises in connecting, not merely with a series succession, with the *successive ordering of units in a series*, such units being represented by fingers or objects with which the child is familiar. The abstraction previously referred to, necessary to counting, consists in the fact that the child must be able to grasp relative place or order in a series as distinct from absolute place, from spatial

✓ form, or other purely qualitative considerations: a fact adequately proved by Mr. Phillips's own data.

I come now to the period of spontaneous delight in counting—in which counting is free from all *explicit* reference to objects. The data collected by Mr. Phillips on this point are wholly in agreement with my own observation and with reminiscences which I have collected of adults regarding the counting period in their own lives (the point referred to on page 26 of the "Psychology of Number.") This is in no wise in contradiction to what has already been said concerning the original connection of learning to count with some spatial reference and distinction. *After* the child has learned to count, the power acquired becomes temporarily an end in itself. The power is set free and manifests itself spontaneously. This is simply in accordance with the general principle of play. This delight in counting comes in the play period of the child's life, as a rule, and evidences the same general principle. Powers originally acquired under some practical (not merely sensible nor merely intellectual) stress, when acquired, run free or on their own account for awhile. The child takes similar delight in walking, running, talking, on their own account, doing them for the mere sake of doing them. It would be futile to deny this. It is folly not to take sufficient account of them pedagogically, and I quite agree with what Mr. Phillips says about the usual failure to utilize this spontaneous delight pedagogically. The child is hampered by being made to work in a formal way upon small numbers and counting by ones, when, if left to himself, he would spontaneously occupy himself with larger numbers and count by twos, fours and fives, almost as easily as by ones. This is as mischievous and cramping as it would be to keep the child going through exercises in learning to walk after he has learned. But theoretically it would be equally futile to deny that this spontaneous interest in counting for its own sake was preceded by a somewhat slow and tedious process in which the child was learning to count (just as to walk) through ordering or adjusting things to each other in a succession of acts.

We now come to the next step, both intellectually and pedagogically. The average child who enters school at six or seven is emerging from this counting period. What he now needs is some further use to which his ability to count may be put, in order to gain new power. Otherwise there is arrested development. Nothing has interested me more in Mr. Phillips's article than his statement that numerical precocities and prodigies are connected with a too protracted dwelling in the counting stage. Now, unless some arrest, similar in principle though less in extent, is to occur in every child when he goes to school, some function must be found with reference to which the child may utilize his ability to count. My contention is that the number sense becomes vitalized and truly educative at this point by being largely directed towards the definition of values in the form of measurement. It is referred to things again, but not for the sake of merely counting the things—that is a relapse to an outgrown stage of development and is an error which is responsible for much of the benumbing, cramping grind of our school work. The reference to things is now in the sense of defining magnitude, measuring area, using scales to determine weight, enumerating the value of commodity with reference to money units, etc., etc. Here the power of counting is used as a tool of control and construction and so becomes truly educative.

Now a word, more definitely, as to the relationship of the series idea to the ratio idea. In the first stage, learning to count, there is always somewhat which is counted off. This *somewhat* limits the

process of counting; and in turn the counting definitely marks out the somewhat counted. This "somewhat" may be illustrated by the fingers of the hand, by a pile of sticks or stones or whatever. The moment the child begins to count, this totality presents itself as vaguely quantitative. Through the counting, this vagueness is transformed into relative definiteness. Mr. Phillips says: "It is absurd to think of a savage attempting to measure a given quantity without any concept of number." I should say it was. Number is absolutely essential to the measurement of quantity. It is by counting or enumerating the number of units that we find out how much of a quantity there is. The point is simply that the savage and the child begin with vague concepts of plurality, corresponding to the series, and with an equally vague sense of the totality or unity (quantity) which is split up into this plurality. By the application of one factor to the other *each* is defined. It is absurd to suppose that any one measures without a concept (vague that is) of number; but it is equally absurd to suppose that the savage or the child has a perfectly clear, definite, and ready-made concept of number before he ever counts up any quantity, and then proceeds to measure the quantity or find out how much there is. We begin with an equally vague "many" and an equally vague "much." Each clears the other up through mutual application. It hardly seems consistent in Mr. Phillips to insist so much upon the child's primitive, crude consciousness of plurality in the form of a series, and not to bring out with equal clearness the part played by intensive concepts of degree—little, much, more, less, light, heavy, hotter, colder, etc.,—in the child's experience. It certainly is misleading in the outcome, because it throws the factor of plurality out of perspective and out of its bearings, and hence narrows and distorts the pedagogical province of number.

Of course, one cannot avoid reflecting his own attitudes and prepossessions in any series of questions which may be sent out. But it must equally be borne in mind that the data received in reply to such questions have value just in proportion to the extent in which the questions have covered the whole ground or only a part of it. It is accordingly exceedingly unfortunate, to say the least, that not a *single* one of the questions in the syllabus given by Mr. Phillips have to do with the child's spontaneous experiences and expressions with *reference to questions of quantity and magnitude*. If one cared for one-sided results, I would agree to get up a syllabus bearing on what children say and do regarding questions of more and less, and instinctive comparison of values and amounts, the replies to which would throw into as great relief the quantitative side as Mr. Phillips's data do the strictly numerical side. But this would not be well balanced. The investigation should cover *both* points. I should be very glad if Mr. Phillips would supplement his present inquiry by another along this line; for, till this be undertaken, his present data are necessarily so one-sided as to lend themselves to false interpretations. It would take up, not only such questions as children's spontaneous interest in measurements, but also in formal comparison of amounts. I suggest merely one line which I think would be instructive. Many children in the same family are given to comparing the amount of food given them, particularly when it is a dainty or a luxury. Comparisons of amounts of candy, cake, dessert, and the use of counting to find out who has the most, would, I think, be quite fruitful in showing the way in which the child spontaneously uses number. (This point was suggested to me by Superintendent Ames, of Riverside.)

In the second period, that of counting as spontaneous play, the reference to quantity is, of course, not so obvious. It reappears, however,

in a somewhat subtle form. I am glad to be able to refer again to Mr. Phillips's own data. It is seen in the interest of children in the "last" number—an interest I think which is almost universal. Mr. Phillips refers to the child who wanted to know all the numbers there are, page 241. In general I think it will be found, moreover, that when children are spontaneously counting, they generally set up in advance the amount to which they are going to count up—as a hundred, a thousand, a million, or in extreme cases a child sets out to count clear up to the "last number." Here the magnitude conception recurs as at once setting a limit to and motivating the counting process.

In the third stage the relation between counting and magnitude is so obvious that nothing further need be said. I may say, however, one word more about the ratio idea in itself. The theory and practice of the "Psychology of Number" are that when counting is used by the child to value some amount or other, the ratio idea is *implied* or *involved*. It need *not*, therefore, be consciously, or explicitly stated. In fact, I should say that for a considerable period it should not be. It is enough that the child gets a sense for the use and application of number for purposes of evaluation, without his consciously formulating the factors involved. Familiarity through use must precede conscious formulation. But our point further is that when number is so used the transition to the conscious ratio idea, whether in the form of ratio proper, or percentage of fractions, is natural, and inevitable. The child is saved that break which is almost uniform in present school practice—and a questionnaire upon this point would be instructive. I mean the break between whole numbers and fractions; and between the four fundamental processes and ratio and percentage. When number is used to value quantity, this idea is practically implied from the outset; and when conditions require, and the child is sufficiently mature, he passes without mental friction to conscious recognition. In closing I wish to say that this is not a mere doctrinaire statement, but that it rests upon continuous experimenting and observation in a school where the child's number sense is developed strictly in connection with construction operation in manual training, cooking, sewing, and science work, where number relations are introduced as instrumental to practical valuations.

In conclusion, the discussion may be thus summarized: A conscious series arises through a process of motor adjustments. This is rhythmical, and the rhythm facilitates at counting by making regular breaks and groupings. The series becomes numerical when its parts are *ordered* with reference to place and value in constituting the whole group. Along with this goes a vague recognition of muchness or magnitude (corresponding to the whole group) which is made definite through counting. Then the power of counting becomes an end in itself; *what is counted* is now simply some total amount or numerical magnitude set as limit. Finally (unless there is to be arrested development), this counting power is reapplied to magnitudes of value in order to measure or define them. This *implies* ratio, which comes to *consciousness* as need demands.



BOOK NOTES.¹

By G. S. H.

The Foundations of Success. A Plea for Rational Education, by STANLEY DE BRATH. pp. 191. London, George Philip & Son, 1896. 8°.

In this little book Mr. De Brath, who, by the way, is an engineer in the employ of the Uganda Railway, points out what he considers the mistakes of English education, and outlines a system of training which he thinks would meet the present day needs of the country. He does not limit his treatment to any social class, to any age, nor to either sex, but he really has in his mind boys of the middle and well-to-do classes, and schools of the Eton, Harrow, and Rugby type.

As a scientific man the author naturally approaches the subject from the point of view of Herbert Spencer. In his introduction he points out that England's commercial and industrial supremacy in the past has been due in some large measure to a succession of European wars and persecutions which have crippled her most dangerous competitors, and have at the same time driven to her shores some of the best trained industrial leadership of France and the Netherlands. The present serious industrial competition of Germany, and in a less degree of the United States, he claims, is due to the fact that these countries, through a generous public education, conducted on modern lines, have trained up not only a large body of skilled workmen, but, still more important, wise directors of industry.

The body of the book is drawn largely from Spencer and Herbart. It insists on attention to physical conditions, the forming of good physical habits, the special training of the nervous system to secure skill, and attention to the important changing conditions of early adolescence. On the mental side it follows the natural lead of the child's developing interest; sets him at work as directly as possible with realities; balances scientific and humanistic studies; and simplifies and co-ordinates the whole curriculum. There is nothing very new in all this; but, written as it is from the point of view of a man outside the teaching profession, and mainly conversant with the higher class English boy's schools, it has a freshness and suggestion that will interest American readers.

Many of the details of the book are necessarily open to question. Thus, the author says that early peoples, like the Egyptians, care mainly for size in architecture. Then by analogy he reasons that children care mainly for size in their early work with form. Such a statement seems open to two objections: in the first place, the Egyptians were an old people when they built their great temples; and in the second place, a direct study of children, or of undeveloped adults, shows that they are attracted by details and do not easily grasp large wholes. These questionable details will not, however, seriously mislead readers, while the treatment of the stages of growth in children, the recognition of the great importance of sex in childhood and youth, and the very sane and well balanced suggestions concerning this dif-

¹ These notes do not preclude fuller notice later.

ficult subject, will prove helpful to many teachers and parents. Religion is duly recognized as a great factor in education, but it is dealt with from the point of view of modern interpretation, and one wonders a little that a writer who wishes to immediately influence the British public should dare to suggest that the early chapters of Genesis should be treated as an exalted form of myth.

The book closes with an appeal for the establishment of a school to carry out the ideas presented, and it is significant that the writer looks to private enterprise rather than to government aid in carrying out his ideas. One cannot help feeling that Englishmen are curiously unconscious of the fact that their country is in the midst of one of the greatest educational experiments ever undertaken, furnishing almost ideal conditions for the carrying out and realizing of new ideas.

EARL BARNES.

Some Observations of a Foster Parent, by JOHN CHARLES TARVER. Constable & Co., Westminster, 1897. pp. 282.

Brilliant, enthusiastic, a little whimsical, these thirty chapters on educational subjects are also full of sense and as fresh and free from the ear marks of the common pedagogue as anything we have seen for many a month. The first chapter, on the Detestability of Schoolmasters, is rather a plea for a better status for them than a condemnation. Dr. Arnold is so praised because he was simply a kind and common sense man, and stands out by contrast from the common ruck of teachers. The latter are degraded, partly because every ignorant young person who becomes a parent enters a new world, and thinks their new interests are insights they must force home on them as if they were the natural enemies of childhood. Mr. Tarver is impressed with the pathetically little that education can do. Tommy, his *steckpferd*, has little curiosity, many impediments of sense and soul, adds and multiplies fairly well, but sticks at subtraction and division, with bad pronunciation and worse syntax, a victim of experts who know every topic except the chief one, children, with too much rote memory for the development of what is called by courtesy his mind, making blunders enough to base a great new science of ignorance or stupidity, etc. Each of the chief topics of primary and secondary education are treated incisively and suggestively, and Tommy's honesty and health, mind, Universities athletics, Eaton, Clifton, etc., are themes of interesting conversational comment.

Waste and Repair in Modern Life, by ROBSON ROOSE. London, 1897. pp. 364.

An expert in hygiene here reprints twelve papers on wear and tear, rest and repair in London life, the art of prolonging life, clothing as a protection against cold, fasting, cholera, diphtheria, water supply and health resorts, etc. Many men now try to live several lives at once. A lawyer writes stories, is a society leader, etc. To this moral dissipation some anxiety or "fear spread out thin" is added, and often a high pressure man, who has gained much to retire *upon*, has nothing to retire *to*. The golden mean, which is really man's best estate, is despised as vulgar mediocrity. Centenarians are often thought to be faddists, insisting on such popular ideas as that sugar will prolong life, or much washing or bathing, or little of it, a tight belt, or no corsets or lacing, early rising, little and plain food, will do the same, etc. Most, however, are in moderate circumstances and live a common life with no theories. They keep a constant ratio between forces in use and those in reserve, with special care for the latter. A late decadal report in England showed that 400,000 persons were alive who,

had longevity not improved since the preceding decade, would have been dead.

Emlöbstobba, von HERMANN LIETZ. Berlin, 1897. pp. 192.

Its sub titles are romance or reality; pictures of school life, past, present or future; and there are 22 full page autotype pictures of kitchen garden, dining hall, aula, a theatre party of boys in white tights representing Cæsar's gladiators, hiving a swarm of bees, cutting down a big tree, the work shop, building a pigeon's house, and a judge's stand on the play ground, at the boat station, building a brick sluice way, digging potatoes, making hay, with a harvest home celebration. This is an idealization of a practice school of the Pedagogical Seminary at Jena, wherein it is sought to embody in a new school state the ideas of Stoy, Dorpfeld, Rein, Willmann, etc., in a way to combine German organization and English freedom and exercise and French style and power of expression. Shakespeare, Goethe, Molière, Emerson, Carlyle, the microscope, telescope, violin, football, axe, spade, pitchfork, football, boxing, are combined ideally, yet in a way that makes the past and present of education seem a dream. The past was a school of instruction, this of education.

Die Entwicklung der Religiosität und das werk der Religion, von ED. REICH. Zurich, 1896. pp. 353.

This first volume is devoted to the evolution of religious sects and the right of religion. The author is a voluminous writer in anthropology and treats, according to his wont, the most varied topics in an interesting way.

La Croyance au Surnaturel, par LOUIS VISMARA. Paris, 1896. pp. 416.

The author traces the history of the supernatural world through the ancient and oriental world, Greece, Rome, Judea and Christianity. When the supernatural is annexed to the natural, heaven and earth will be one.

Esquisse d'une Philosophie de la Religion, par A. SABATIER. 4th ed. Paris, 1897. pp. 443.

Psychology and history teach that religion is a prayer of the heart. It shrouds itself in mystery. Religion is subjected to the law of transformation and will continue to change. Dogma is as needful for the intellect as myth for the heart.

The Buddhist Praying-Wheel, by WM. SIMPSON. London, 1896. pp. 304.

This treats of wheel-symbolism and circular movement in custom and religious ritual. The so-called prayer-wheel is a misnomer, for it expresses praise only. These wheels in Tibet are turned in vast numbers by water, wind, hot air and smoke, and still more by hand, and symbolize heaven, God, perfection, a cycle, etc. Circumambulation of shrines, temples, holy objects and persons, also whirling after the fashion of the dervishes, has a kindred significance. The wheel is often an amulet, if may signify fortune, may be of solar origin, is related to the swastika and to thunder, may be complex or compound, have its own God, etc.

The Social Teaching of Jesus, by SHAILER MATHEWS. The Macmillan Co., 1897. pp. 235.

This essay in Christian sociology is by a professor of New Testament History and Interpretation in the University of Chicago, and treats Christian anthropology, sociology, the family, State, wealth, social

life, the forces of human progress and the process of social regeneration.

Jésus de Nazareth, par A. RÉVILLE. Paris, 1897. Vol. I, pp. 500. Vol. 2, pp. 522.

Professor Réville enters upon this comprehensive critical study of the antecedents of early church history and the life of Jesus with exceptionally long and thorough preparation, and these volumes are not only all that the last, written with knowledge of all that has gone before should be, but are pervaded by new suggestions that are sure to hold the attention of all interested to the end. An obscure and very humble life with three or four years of teaching, not a word written nor an institution founded, a premature and disgraceful death, all records only such words and incidents as stuck in the memories of simple, ignorant men and all in an obscure corner of the world—surely never flowed such a river from a spring of such small surface. The legend of the miraculous birth is the homage rendered to extraordinary sanctity. Redemption by Jesus' death is the mythic form of an experimental fact illustrated by the martyrs who devote their lives to the race. Sin in Adam is bad heredity, and Jesus remains far above all the best exponent of the eternal gospel.

Who Was Jesus Christ? and Other Questions, by F. W. AVELING. London, 1897. pp. 333.

This is a reprint of smaller treatises designed to help Christian En-deavorers, Sunday School workers, and students for the ministry. Is there a God? Can we believe in miracles? If a man die, shall he live again? besides the longer paper giving title to the book. These are treated in a rather liberal, simple and impressive way. Each question is answered in the affirmative, and Christ is argued divine after a presentation of reasons pro and con.

Das Apostolische Symbol. Bd. I, 1894. pp. 410.

This is the first volume of a treatise on apostolic symbols, their origin and original meaning and position in theology and cult, and is devoted to the symbolism of baptism. The treatment is exhaustive and comprehensive, and with all the formulæ in Italy, Africa, Spain, Ireland, according to the different fathers, with a long treatment of the oriental formulæ.

Liturgische Reimofficien des Mittelalters, von C. BLUME. Leipzig, 1897. pp. 291.

This is volume XXIV of the *Analecta hymnica Medii Aevi* and contains several hundred Latin hymnal services in antiphonies, responsions, canticles, vespers, nocturnes, matins, benedictions, invitatoria, etc., well annotated.

The Saints and Missionaries of the Anglo Saxon Era, by D. C. O. ADAMS and T. T. CARTER. London, 1897. pp. 458.

Over sixty persons are briefly characterized, and the authors have happily presented the results of long and careful researches in attractive and popular style. A number of full page illustrations are intended to bring more vividly before the mind the state of religious life in early England.

Christian Belief in the Light of Modern Criticism, by REV. GEO. HENSLOW. London, 1896. pp. 280.

There is in these pages a striking absence of many of the prejudices too often indulged in by the author's clerical brethren. The fall, the curse, salvation, atonement, faith, regeneration, communion, etc., are

pleasantly and suggestively treated from a standpoint somewhat more conservative than that of most American Unitarians.

The Concise Knowledge of Natural History. 530 original illustrations. London, 1897. pp. 771.

This compend is by nine distinguished specialists and the illustrations are mostly original. Mammals, birds, reptiles, amphibia, fish, crustacea, spiders, molusca, etc., down to protozoa, are concisely treated, and it is the best popular encyclopedia of the topic known to the writer.

Nature's Wonder Workers, by KATE R. LOVELL. Cassell & Co., 1886. pp. 272.

This is a collection of short life histories in the insect world, thirty-one in all, well told and with illustrations on nearly every page.

Life Histories of American Insects, by C. M. WHEED. Macmillan Co., N. Y., 1897. pp. 272.

The author is a professor in the New Hampshire College of Agriculture, and describes twenty-six species. His book has twenty-one full plate illustrations and many figures in the text.

Wild Neighbors; Out Door Studies in the United States, by ERNEST INGERSOL. Macmillan Co., N. Y., 1897. pp. 301.

This is one of the best of Mr. Ingersol's many good nature books. There are chapters on the gray squirrel, the badger, porcupine, skunk, woodchuck, raccoon, the puma and the coyote, with chapters on the use of tools and animal training, and a couple of dozen illustrations.

Phonics and Reading for the Use of Teachers and of Students, in Normal and High Schools, by C. C. VAN LIEW, Ph. D., and AMELIA F. LUCAS. Bloomington, Ill., 1897. pp. 53.

This booklet, by the Supervisor of the Training Department of the Illinois State Normal University and his assistant, is a concise treatment of the organs of speech, consonants, vowels and diphthongs, diacritical markings, etc., designed to furnish more available scientific cases for the study and teaching of the elementary sounds of the English Language, with the best means and devices for securing a more beautiful oral speech.

Principles of Vocal Expression, being a revision of the Rhetoric of Vocal Expression, by W. B. CHAMBERLAIN, of the Chicago Theological Seminary, together with *Mental Technique and Literary*, by S. H. CLARK, Ph. D., of the University of Chicago. Chicago, 1897. pp. 478.

This book is the outgrowth of practical class-room work and is especially adapted to the second year of the college course. Stress is laid on paraphrasing as a preparation for expression, types of utterance, grouping, discrimination, emotion, volition, criticism, vocal technique, and musical properties of speech. Part II is more practical, with many illustrations of gesture, atmosphere, contrast, etc. A note fails to do justice to perhaps the most carefully belabored attempt to bring order and give academic dignity to rhetoric and elocution yet made.

Standard School Physiology, Hygiene, and Anatomy, by R. B. SMITH, M. D., and EVERETT C. WILLARD. The Morse Co., 1897. pp. 274.

This is an attempt to couple the most essential and useful facts of physiology from standard authors for pupils of academic, high schools and higher grammar grades, and is illustrated by 116 well chosen cuts,

and is provided with a good pronouncing and defining glossary.' It will help toward desirable prominence a topic upon which schoolroom work had fallen far behind the state of scientific knowledge.

Deformities of the Fingers and Toes, by WM. ANDERSON, F. R. C. S. London, 1897. pp. 150.

Contractions of the fingers, toes, and congenital deformities of both, constitute the three parts of this interesting work. Most of the cases studied and treated are children.

School Gymnastics, by JESSE H. BANCROFT. Kellogg's Teachers' Library, Vol. IV. pp. 298.

This system of physical exercise for schools has 237 photographic illustrations and is entirely for free hand work without apparatus. Both the children and the attitudes and exercises are attractive, and the whole is divided by years into eight parts by grades.

One Hundred Gymnastic Games. Boston, 1897. pp. 90.

These games are prepared by ten members of the alumni of the Boston Normal School of Gymnastics, and dedicated to the memory of Mrs. Mary Hemenway. They are arranged under the heads: ball games, running games, and miscellaneous and quiet. Basket ball appears with several varieties, but many are good old games of, I spy, hop scotch, hare and hounds, all up, etc. For each, the grade, number of players, purpose and apparatus are given. It is an excellent, convenient, and opportune book.

Self Cultivation in English, by GEORGE HERBERT PALMER, LL. D., Alford Professor of Philosophy, Harvard University. N. Y., Crowell, 1897. pp. 32.

English has four aims: "the mastery of our language as a science, as a history, as a joy and as a tool." This paper treats it as a tool only, and is intended as in some sense an introduction to rhetoric, and is an admirable tractlet in form, style and matter.

Report of the Committee of Twelve on Rural Schools. Chicago, 1897. pp. 228.

This is one of the most valuable documents ever published under the auspices of the National Educational Association. It covers most of the many perplexing problems, and contains well matured, practical suggestions. Its appendices from A to S, which are often of great worth, are by various authors, and a convenient index is appended. (Fuller review will follow.)

The Ethics of Gambling, by W. DOUGLAS MACKENZIE. Chicago, 1897. pp. 67.

This little book, from the press of the Chicago Theological Seminary, discusses the need of a theory of gambling, describes the act, the economic nature and moral quality, tells why gambling weakens character, and leads to suicide, and discusses the elementary chance in commerce and the relation between gambling and national life.

The Personal Equation, by HARRY THURSTON PECK. Harper and Bros., N. Y., 1898. pp. 377.

This book contains twelve essays chiefly on literary and political subjects; but two are educational, *The Child* and *its Picture Books*, and *The Downward Drift in American Education*. The author deprecates the refinements of modern pedagogy. Picture books should be more artistic, there should be a more natural way of looking at childhood. A polytechnic patchwork makes university curricula things of

ragged and tattered. No workshops, but only the humanities and liberal arts must be the cry, if men above the commonplace are to be made. No more polymathic plumbers, sordid toilers, hustlers, money makers, baccalaureate laymen, must be turned out of our thinking shops; but graduates must illustrate the majesty of man by doing great things in a large and splendid way.

Schopenhauer's Doctrine of the thing in Itself, and his Attempt to Relate it to the World of Phenomena, by STEPHEN SHELTON COLVIN. Providence, 1897. pp. 74.

This is a thesis for the degree of Ph. D. at the University of Strassburg, and is a piece of careful and valuable work.

The Influence of Woman in the Evolution of the Human Race, by ALPHEUS HYATT. Natural Science, August, 1897.

Professor Hyatt thinks approximation of the sexes means degeneration. The sexes have grown more and more unlike as civilization has developed, till now their convergence means retrogression, and should therefore be avoided. The view is vigorously and impressively presented by one of our ablest biological thinkers.

Ethical System, by WM. WUNDT. Tr. by Margaret Floy Washburn. London, 1897. pp. 196.

This is a translation of a second book of Professor Wundt's *Ethik*, and forms a concise history of ethics fuller than Sidgwick's *Outlines*.

Die Normale Körpergrösse der Menschen, von E. v. LANGE. München, 1896. pp. 38.

This pamphlet explains two large wall charts designed for instantaneous measuring of the height of the school children, and for determining at the same time how each is related to the height of the average child at that age. The author has based his maximal, minimal, and average height upon a careful study of the now voluminous literature of the subject. His charts should be in every school. The stature determinations range from birth to the twenty-fifth year.

Ultimum Organum, par J. DE STRADA. Nouvelle édition, 1897. F. Alcan, Paris. 2 Vols. pp. 387; 484.

Civilization is not due to religion, philosophy, climate, race or social organization; but to method, which is the chief expression of "impersonations." Ontological, logical and scientific methods are elaborately described and criticised.

Psychologisches Lesebuch, by U. S. HOFFMANN. Leipzig, 1896. pp. 168.

A collection of 21 articles on as many psycho-pedagogical topics, by nearly as many Herbartian writers.

Modern Mythology, by ANDREW LANG. Longmans, Green and Co., London, 1897. pp. 212.

This is a running criticism on Max Müller's theory of mythology as originating in words of faded metaphors, and a plea for a more psychological and less philological causation. The chief point of attack is Müller's recent contribution to the science of mythology. Man calls lifeless things by names denoting life and sex, because he regards them as persons, says Lang, and does not, as Müller thinks, regard them as persons because he had already given them names connoting sex.

Animal Land, by KATHARINE and SYBIL CORBET. E. P. Dutton & Co., N. Y., 1897.

A girl of four developed very distinct types of impossible animals and invented both names and characteristic acts for each, no less original and as individual as their forms. Her mother drew them, following the child's image of the form, giving each a page with name and what each does. Andrew Lang writes an introduction comparing it as the product of a real genius to Alice in Wonderland and Mr. Lear's works, and conjectures that these creatures are psychologically akin to imaginary companions. Some of them have no body and some no legs. There is, *e. g.*, the melly which "is so surprised and eats toffee;" the dopple that "does everything it is told and eats pumice stone;" the ginniwiws "larger than any table and is always there;" the hottle that "stands on its head and enjoys itself;" the stoop that "looks at everything but never touches;" the jimatite that "likes potatoes, grapes, catches crabs, lives by the sea and goes after rats;" the joox so called "because it is not a bear, it growls and eats cabbages and beans;" the burkan "a nasty biting thing and there is no more about it;" the cattaby that "only hops and eats and eats and eats;" the jumma that "likes chocolate and rabbits;" the pokiban "that eats almonds and jumps;" the azorkon; the ding that "is so happy;" the didd that "likes fish and water;" the boddles that "screams and eats candles and soap;" the jappa; womp; the modd; the booba; the beppy that "likes lions and bread and milk;" the sleem; the jinkatee; the kank; the penna; the weedle that "has such dainty little ways of pulling up potatoes;" the rikka; toop; pollyannser that "loves frame food;" the beeda; jactusturdus; the wuss and junn.

Harvard Episodes, by CHARLES MACOMB FLANDRAU. Boston, 1897. pp. 339.

These seven sketches depict undergraduate life at Harvard from a social point of view. Each story has a climax which is led up to with much skill, and the conversation and characterizations of Wolcott the Magnificent, Wellington, Haydock, Prescott, Hewitt, Endicott, Davis, McGaw, Jack and Betty the butterflies, Marcus Thorn the tutor, Beverly, and some others, suggest real persons, incidents and sentiments of college life as it is lived out by gilded young men to whom the professors and curriculum are very inconspicuous incidents amidst many other more absorbing interests. The struggle of deserving young men for social recognition; the brutal athlete and bully, attractive despite his faults by reason of a suggestion of better qualities that may later get control of him; the stupid ignoramus, who is, nevertheless, a fine fellow and a thorough gentleman; the callow, roistering young cub, precociously depraved, yet who it would seem might be so easily reclaimed; the thoroughly sensible senior, who is mentor and almost oracle to a few underclass men, because he knows college life; these and others such as they; their sayings and doings in term time and vacation, at clubs and in their rooms; drunk and sober; cramming hard and absolutely idle; just entering the quadrennial career and looking back on its unreality from the greater wisdom of a few years out, are well depicted in a way full of interest to the psychologist of later adolescence, the student of education and to the moralist, and all in a style of marked literary promise.

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EDITORIAL.

The present number closes volume five, which is the first volume containing four numbers. It is the largest volume yet published, containing over six hundred pages. The plans now matured for volume six justify, and the added expense of enlargement necessitates, the increase of price to five dollars per year, and even this is not proportionate to the increase of matter and expense.

The present number contains an unusual number and variety of matter. Mr. Partridge's Study of Reverie should be read in connection with the article on Mental Automatisms (Vol. V, p. 41). The subject is so new and vast that this article is confessedly only a beginning toward further needed empirical study. The appendix on Imaginary Animals is rich in psychogenetic suggestions.

Mr. Bohannon's article on the Only Child in the Family is more than an elaboration of the same writer's outline of the subject in his Peculiar and Exceptional Children (Vol. IV, p. 36). A perusal of this painstaking study teaches how exceptional only children are likely to be in health, relation to school, play and social life, mental and moral peculiarities, precocity and needed treatment.

Principal Taylor's Practical Aspects of Interest (p. 497), has a practical utility in suggesting how poor teaching can be

located, the work and zest of teachers tested. His five tables are the results of a painstaking study.

The weather has long been supposed to exert an important influence upon the moods and psychic activities of adults, and is commonly thought to affect the spirit of the school. Mr. Lemon had previously gathered a few considerations upon this important point (*Psychic Effects of the Weather American Journal of Psychology*, Vol. VI, p. 277). Mr. Dexter (p. 512), publishes four careful plates illustrating the effects, respectively of wind, barometer, temperature and humidity, upon misdemeanors requiring corporal punishment in 606 cases in Denver.

Mr. Wissler investigated children's interest in elementary reading (p. 523), by the questionnaire method, and presents his results in six plates and tables, showing that fiction and poetry are preferred, that complete stories are more interesting than outlines, that girls prefer emotional, and boys the active side of life, that boys have most individuality, and that sex differences increase with age (p. 540).

Mr. Wilson meets a "long felt want," at least at the library which he directs, in his carefully selected, sometimes individually characterized, topically indexed list of 641 of the more important books and articles on child study, nearly all of which are available here.

Mr. Phillips (p. 590), replies to Professor Dewey's criticism in the last number, of his article in October, 1897, upon *Number and Its Applications*. Mr. Hugh discusses the Herbartian idea of formal education from the standpoint of physiological psychology, and among the reviews the books of Nietzsche and that of Marro on adolescence are criticized at unusual length.

REVERIE.¹

G. E. PARTRIDGE, Clark University.

"Imagination is the preparatory school of thought."—GOETHE.

I.

INTRODUCTION.

The following study of reverie was commenced in co-operation with Mr. E. H. Lindley, using as a basis the returns to a syllabus on reverie, fancy and imagination, issued in 1895. Owing to the pressure of other work undertaken by him, and to the desire on my part to extend the study beyond the original plan, all the material was finally turned over to me. Thanks are due at the outset to Mr. Lindley for the papers and for much assistance.

Although reverie has been noticed in its relation to pathological states, to clairvoyance, to religious phenomena, and to genius, it has received but scant attention from psychologists, and its pedagogy especially is an entirely new field. Reverie might be studied profitably, with more attention to the mental content, as such, than has been attempted here. It would seem to be the natural approach to the whole subject of association of ideas and new light might be expected from such a treatment, upon obscure facts of association, which the present doctrine seems inadequate to explain. But such a study would involve consideration of a large number of cases, in great detail and with more intimate knowledge of each than was obtainable by any readily accessible method. More attention has been given in this paper to the relation of reverie, regarded as a type of imagination-states, to the instinct-feelings, and the pedagogy of the subject has been kept in view throughout.

The term reverie is extended to include not only day dreaming and castle building, such as is common in childhood and adolescence, but also all such states of absorption and abstraction as are described in the article on mental automatisms mentioned above, and there regarded as incipient reveries. An attempt is made to make plain the connection of all these psychoses, with the rudimentary-consciousness group and the general conclusion is reached that the function of imagination is to exploit the

¹ This paper forms a second chapter in the study of automatic mental activities. See *Some Mental Automatisms*, by Lindley and Partridge, *PEDAGOGICAL SEMINARY*, Vol. V, 1, pp. 41-60.

recesses and automatisms of the mind and to widen out and to make more generic the consciousness of the individual.

With the increasing recognition in psychology of the importance of the instincts and the feelings, and the entrance of heredity into the realm of the psyche, a new view of mind is imminent, if not already upon us. We may at least no longer speak of mind as a unit, but rather as an aggregate of parts very imperfectly united. It is a patchwork of survivals of psychoses. Evolution is accomplishing a more and more complete unification of these parts, and the physical basis of the process is now known to be the development of the association areas of the highest level. In undeveloped, in diseased, and in degenerate minds, this process is seen in its earlier stages, or reversed, and the moral and mental inconsistencies which characterize such conditions indicate to what a degree disintegration may be carried.

Literature. Etymologically reverie is related to dream, and is usually a direct derivative from the word for dream, as *rêverie* of the French, *Träumerei* of the German. The Arabs have a word "keff," which signifies a waking dream, with the added significance of happiness in repose. So the Italian "far niente" is best translated as "sweet repose."

The literature which touches most closely the psychology of reverie, was not written for that purpose. The lives of the mystics, religionists and poets furnish a wealth of material for the study of creative reveries. The literature of narcotics, of sleep and dreams, pathological dream states, hallucinations, crystal gazing and clairvoyance, contains facts and theories which bear upon our present topic.

A prevalent conception of the nature of reverie is well expressed in an article which has been copied from encyclopædia to encyclopædia as follows: "In an exaggerated form it is of rare occurrence, but when exceeding absence of mind or abstraction from what is passing around it is abnormal and unhealthy. It may under all circumstances be regarded as a phenomenon of an imperfectly constituted, if not of a diseased nervous temperament." This view of reverie is found also among French writers. Janet says that all mental automatisms, as well as all trance and hypnotic phenomena, belong to the hysteric diathesis. No perfectly normal brain, he contends, is capable of these split-off states, which are present in the hypnotic condition.

Dr. J. Crichton-Browne¹ has described from a medical point of view, certain automatic and dreamy states, which he has found to be prodromal to epileptic disturbances. The most common form of these automatisms is the feeling, so often described by the poets, that the present experience has all been

¹Dreamy Mental States: Lancet, July, 1895.

lived through before. This feeling the author maintains indicates over culture and neurotic tendency, and may be the first step in a series of changes which end in complete obliteration of mind. The state is one of vagueness of feeling of present surroundings and an increase of consciousness in another direction, indicated by a too vivid revival of former surroundings. There is a loss of control of higher centers and a correspondingly raised activity of other nervous arrangements. Other sensations in this group are a loss of identity, going back to childhood, the vivid return of an early dream, loss of touch with the world, deprivation of bodily substance, loss of proportion, momentary blank despair, being at the day of judgement, all of which dreamy states are abnormal in their essence and morbid in their tendencies.

This very interesting article is open to the criticism that it does not clearly recognize the fact that these conditions, although, no doubt, occurring in connection with epileptic disturbances are often found in normal fatigue and in adolescence, and that they are not abnormal in their essence. Surely the temporary loss of control of higher centers, and a correspondingly raised activity of other nervous arrangements, does not indicate a defective nervous system.

Dr. J. Hughlings-Jackson offers the following explanation of reverie. "The several levels, as evolution goes on acquire a degree of independence of each other. The highest centers can energize independently of the lowest centers, out of which they have evolved. Thanks to the sensory centers being resisting positions, as well as centers of energy, the highest centers can energize independently of the surroundings. Thanks to this protection there occurs internal evolution in our highest centers. We can have combinations never actually experienced. There is an organization of many different nervous arrangements of our highest centers during actual converse with the surroundings. In sleep, reverie, reflection, the highest centers will be in least activity, and the next lower of the centers in greater activity. The nervous arrangements of the highest centers are left to fight it out among themselves. Manifestly new, though evanescent combinations, are made during dreams, but I contend that permanent arrangements (internal evolutions) are made during so-called dreamless sleep."

Though not quite understanding what this process of internal evolution, which makes new combinations may be, I have quoted this view at length because it is a clear statement of the hierarchy of centers, and the independent action of different levels of consciousness. Hirth¹ in his well known monograph propounds

¹ Localisations-Psychologie.

the question "Warum sind wir zerstreut?" His answer to this question constitutes his "*Merksystem*" theory of consciousness. These apperceptive groups are of all degrees of complexity, they lead lives more or less independent of each other, have different temperaments, differ in habits of fatigue, and recovery. There is a constant struggle among the *Merksystem* for dominance in consciousness. The multiplex character of the "*Ichsynthese*" is the cause of the phenomena of distraction, and reverie, and mind wandering, for when one "*System*" is fatigued others spring up automatically, to obtain audience. By far the greater part, and the better part of mentality is carried on below the threshold of consciousness, for consciousness or the highest degree of a great number of conditions of attention represents in a way a friction of the machinery of thought, for it comes out of the struggle for dominance among the elements. Momentary reveries and mind wanderings which occur during periods of most intense thought, are normal, Hirth maintains, for during these pauses the work is being done in the unconscious undisturbed by consciousness.

Contrasted with the unconscious cerebration theory of Hirth, is the view of F. W. H. Myers. For him the conscious thought is but a very small part of the mental process constantly going on in connection with the organism. The mind is composed of numerous strata, *all conscious*, and the subliminal part embraces a far wider range, both at the physiological and at the psychological end of the spectrum. Only a small part of this subliminal activity rises into the cognition of the empirical self, and what shall so rise may well have been originally determined by some process of natural selection. Although this conception of a stratified consciousness is pressed into the service of a theory which is undiscussable on purely psychological lines, in these articles Mr. Myers has brought together a vast number of data, which bring home forcibly the narrowness of the conscious personality view of mind. Although far from agreeing with Mr. Myers when he says that the hypnotic trance and dreamy states represent a higher type of mentality than the ordinary waking consciousness, all the evidence at hand leads to the conclusion that they are not in their essence abnormal, and that some of these states perform an important function in the growing mind.

There is a type of reverie, no doubt, which represents a high order of nervous structure. Thinking of the effortless, logicless kind has given to the world many things of value in art, music, literature, and science. To quote Brierre de Boismont. "There are two kinds of reverie, that of weak minds and that of deep thinkers. Reverie is a prelude

to great creations in minds like those of St. Jerome, St. John, Crystosom, Descartes, Malebranche, Dante, Milton, Spinoza. To such minds reverie is often force, power, health, and even longevity. With them solitude is holy. I am persuaded that devotees, lovers, prophets, Illuminati, Swedenborgians, owe all their presentiments, their visions, their prophecies, their conversations with celestial intelligences, their journeys in heaven and in hell, the illusions to which that state of being makes us susceptible to the extravagance and superstition of their contagious reveries. But I do not hesitate also to say that it is probably in this state that men of genius have conceived the most original beauties of their works. In it the metaphysician has seen the first glimpses of the most ingenious of his systems, the poet, his most beautiful verse."

Oelzelt-Newin in his monograph on imagination, has much that bears upon the subject of reverie, particularly his treatment of the relation of the instinct-feelings to imagination.¹

ADOLESCENT DAY DREAMS.

The data which are presented in this section were gathered mainly by means of the questionnaire issued in 1895, the subject of which was "Reverie, Fancy, and Imagination." The section relating to day dreaming was as follows:

(a) Describe any case, whether in yourself or others, of reverie or day dreaming, when the mind was vacant, far-away, wool gathering, castle building, etc. Just what was the mind doing, how did you or the person observed, look, act, feel? What condition favors this state, and how came the awakening? Do you think it is like hypnagogic phenomena or those images experienced just as we are falling asleep? Do you deem them hypnotic?

(b) Do you rehearse in mind past scenes and events and idealize them or your own part in them? or do you day dream yourself, as, *e. g.*, delighting a circle of friends with your music, when in reality you are a very poor player or singer; entrancing an audience with an eloquence you never commanded; saying brilliant things that never occurred at the time; being a center of attraction, interest, or affection, influence, wealth, fame, etc., which you were in fact not known for? We all do this, but what is now wanted is frank, and carefully exact

¹ It is hardly necessary to state that the notes upon the theories of reverie given above do not pretend to cover the literature of the subject. They are given more by way of acknowledgment of suggestions and points of view, which have been of assistance in the preparation of this paper.

and detailed cases. In these states does the mind flit rapidly from point to point or dwell on one?

The papers yielded 337 usable cases. The general nature of the returns can best be illustrated by a few cases.

F., 17. Whenever I hear sad and touching music I always day dream. Sometimes when not interested in what is going on or when alone I sit in a sort of dream. I cannot describe how I feel except that it is an easy, rested, comfortable feeling. It seems as if my soul were away from my body. I do not seem to see anything. It is as if my eyes were closed. Sometimes I stay in this state for a short time and sometimes I dream a long while. Sometimes I am awakened by a noise, sometimes I awake of my own accord, as far as I can observe. It is not like falling asleep.

F., 19. In my day dreaming as a child, I usually planned the course of my life, where I was to be educated, what my calling was to be, where I should live, etc. I usually day dream when alone, and am awakened if spoken to. When falling asleep I am less conscious than when day dreaming, and I am more easily awakened from reverie than when falling asleep. I do not awake with a start, but simply take up my work again.

F., 19. I indulge frequently in day dreaming. One particular instance I can recall. It was at church, and I lost every word of the sermon. I cannot remember my dream, but my mind was far away. I was made aware of the end of the service only by the movement of the congregation. During sermon is my favorite time for wool gathering. I often meet people on the street, and do not see them, although I look at them. I love to build castles in the air. I love to think of myself as rich, and as travelling far from home.

The following case describes better the mental content :

F. 17. Sometimes I go over my past, and make my experiences much more satisfactory than they were when they originally occurred. Again I imagine myself famous as a singer, when, in reality, I cannot sing at all. Then again, I think of myself as winning many degrees, and as admired for my scholarship; as a matter of fact, I am 17 now and not especially brilliant in any line. Some of the scenes I linger over a long time, especially those in which I figure as the shining light.

These must suffice by way of illustration, though many of the papers are exceedingly interesting and suggestive.

Nearly all the cases in this group are of Normal school girls, ranging in age from 16 to 22 years, and all within the adolescent period. The majority are from 17 to 20.

A word as to the value of such returns. The phenomena which are described here are obviously largely closed to direct observation or experiment. Memory must be depended upon and allowances made for inaccuracies of observation and of statement. But day dreaming is a theme of natural interest to most people. It is the sweetest thing in some lives. Day dreams are vivid and real and they linger in memory. Thus, although no fast conclusions, especially quantitative conclusions, can be drawn from such accounts, or any conclusion, in fact, except in a very general way, much value is attached to them as descriptive and suggestive comments on the subject in hand. The data

fall conveniently for treatment under five rubrics: (a) The physical phenomena, position, etc.; (b) The mental state, emotional tone; (c) the conditions and causes, immediate and remote; (d) the mental content; (e) the awakening.

(a) *The Physical Accompaniments.* The eyes are most frequently mentioned as being affected in reverie, as follows: staring, mentioned in 56 cases; far-away look, 19; eyes wide open, 7; protrude, 4; roll upward, 3; half close, 2; close, 1; move rapidly between two points, 1.

The Facial Expression. Blank look, 15; look sad, 9; smile, 7; calm, 5; happy, 4; lips parted, 4; frown, 2; stupid or dazed, 2; mouth tightly closed, 1; face set, 1.

The facial expression, in the great majority of cases, indicates a relaxation of the muscles. The blank, expressionless look predominates, and the sad look, inasmuch as the mental state is always said to be pleasant, is rather to be regarded as negative and due to a lack of muscular tension.

The Position, Movement, etc. In 24 cases the body was said to be motionless; all muscles relaxed, 3; arms or hands folded, 3; head bent forward, 2; head thrown back, 1; tense position, 1. Movements were muttering, talking, 4; head turns frequently, laughs, claps hand, moves slowly, taps with the finger. In 20 cases reverie is said to be carried on in connection with other activities, as playing the piano, sewing, rocking, walking, doing mechanical work. One, a man, reports that he always day-dreams when walking home rapidly, after a hard day's mental work; as soon as he begins to feel warm and comfortable the mind begins to be crowded with preposterous reveries. They are usually motor in form. In one case the face was said to grow pale in reverie.

The most characteristic sign of reverie, as shown by these returns, is muscular relaxation. There is failure everywhere of the sensory to pass over into the motor. The eye muscles, the play of which contributes so much to expression, are relaxed. The axes of the eyes tend to become parallel. Somewhat late in their life history eyes have come round to a front position, vision has become binocular, and the mechanism perfected for short range vision. In man the bony structure, which has been slower in becoming adjusted, shows this primitive form, for the bony sockets are still slightly divergent. With man work is largely associated with near vision. The chief difference of position between hard thinking and day dreaming some testify to be in the focus of the eyes. With a hard mental effort the eyes are fixated on a near point, in reverie upon a distant point. In sleep the eyes roll outward and upward, some authors say. In alcoholic intoxication the eyes diverge and there is double vision. Tension and attention go

together. If attention is a hard push up, as Ribot says, in reverie the process is reversed. The feeling of effort ceases and the whole mental and physical condition suggests a state antedating the beginning of mental work. The emotional tone suggests the same view. The here and now is annihilated, and the mind reverts to a more primitive condition. The individuality is lost, and limitations of time and space are transcended, the mind becomes more generic.

(b) *The Subjective State.* Unconsciousness of surroundings is most frequently mentioned. Other expressions describing the same state are "far away feeling," "forget myself," "as if my soul were away from my body," "as if in a dream," "in the world, but not of it," "suspended in space," "as if moving upward through space," "a conscious letting go, and the self poses simply as an onlooker."

Conditions referred to the senses are, "cannot see," "everything grows dark," "everything looks blurred," "see things in the room change," "a buzzing in the ears like voices far away."

All these express the marked anæsthesia, the failure of the ensemble of external stimuli to weave itself into the mental content. The suspended feelings, the moving upward through space, are very frequently experienced at the time of falling asleep, and in dreams, and are doubtless due in part, at least, to the sensations from relaxing muscles.

The emotional tone in reverie is almost unanimously expressed as pleasant, for not only is comfort and a general ease of mind necessary for the induction of the state, but any disagreeable event occurring in the dream is suppressed or transformed, or else summarily brings the reverie to a close.

The happiness of this state is almost ideal with some. "Never so happy as when day dreaming," "the happiest moments of my life," "perfect content," are phrases used to express it. As summary of the 39 cases in which the emotional tone was mentioned follows:

Happy, contented, etc., 19; a restful feeling, 7; comfortable, 4; drowsy, happy or sad, according to the dream, 1; listless, 1; dreamy and free, 1.

Reverie selects the pleasant experiences of life or transforms the unpleasant. It is a pleasure state, however caused. Its sorrow, when any occurs, is rather the pleasant, sympathetic sorrow of an onlooker, than the pangs of a sufferer.

(c) *The Causes and Conditions.* This is the most important and suggestive chapter of the returns.

In all there are enumerated 99 different causes or conditions which favor reverie. These may be divided into three groups.

- (1) The negative or general conditions. (2) Emotional causes.
(3) Hypnotic causes.

(1) *Conditions.* Solitude leads, mentioned 51 times; fatigue, 46; quiet, 34; unoccupied, 14; not interested, 10; after a hearty meal, 8; after a party, 7; when drowsy, 6; in church, 5; first thing in the morning, 4; and then the following mentioned 1 to 3 times each: in school, at table, after retiring, alone in my room at night, when waiting for any one, before hard thinking, after strong effort of attention, lying down in the evening, when much fatigued. One says that quiet is not necessary, one often day-dreams in a room full of people.

The chief fact to be noted is the important part which fatigue plays in this condition. It is not overwork, evidently, that is meant, but physiological fatigue of the sweet, restful kind, which normal tire ought to be.

(d) *Emotional Causes.* Depression, discontent, and similar emotions are mentioned as inducing reverie in 38 cases, divided as follows:

After saying something I was ashamed of, 11; discouraged, 9; lonely, 6; when things have gone wrong, 3; after a disagreeable time, 2; worried, 1; after being angry, 1; when some one had excelled me, 1; ill, 1.

Reverie was induced by pleasant occurrences, as follows:

After hearing good music, 6; after reading a good book, 5; after the theater, 3; after pleasant time with friends or entertainment, or success in school, 1 each.

Jealousy, discontent with the present life, and depression seem thus to be more frequent causes of reverie than the pleasurable emotions. Reverie in these cases appears to be resorted to to smooth out the ruffled feelings. Over against the memory of the past, and the stern presence of reality, the ideal picture of the fancy is placed, and the soul is thereby comforted. This can best be illustrated by cases.

F., 20. I remember attending a dance one evening, when I was exceedingly stupid, I think I could have counted the words I spoke. Next day I went over to myself the brilliant things I might have said, and pictured myself the belle of the evening.

F., 18. I often rehearse past scenes, where I have said something that might better have been omitted. When slighted by some one I have solaced myself by imagining myself superior to the person in every way.

F., 20. When something unpleasant has occurred, I dreamed myself at the same place and doing exactly the opposite of what I did.

F., 18. After a party or social gathering I think over what I have said, and then add a great deal more, which I thought myself foolish for not thinking of at the time. After the girls have treated me badly, I imagine myself the center of attraction.

F., 19. I rehearse and idealize the past. I am poor in mathematics, and after failing in the class, I imagine myself suddenly becoming learned and astonishing my friends.

F., 16. I have often rehearsed past scenes, and idealized my own part in them, especially when I have been slighted; I imagined myself acting so charmingly that all are sorry, and become more attentive to me than to any one else.

F., 17. I am shy with strangers, but I afterwards imagine myself as entertaining, talking, and smiling, and being the center of attraction.

F., 17. When things go wrong I am apt to fall to dreaming about them, and changing the facts to suit my fancy.

M., 20. I often rehearse in mind past events of boyhood, especially if I did something not exactly right.

F., 18. I am bashful with strangers, but I make it all up in my day dreams.

F., 18. One evening I went to the theater and was so busy thinking about the play that I forgot to thank my friend for taking me. At home I went over all the scene, and all that I should have said, and then I felt better.

This form of reverie suggests the part which heaven-ideals have played in history. These ideals are usually complementary to the earthly life, in the lower races, simply filling up the gaps of a sensual existence, but becoming more and more different from the temporal existence as civilization advances. The motive is the same as in this group of day dreams. The instinct to compensate for distress and fatigue, is at the bottom of much of the reverie of religion and philosophy. It has inspired the mythic visions of Fountains of Youth, Utopias of this world and the next, heavens and havens of rest, of surcease of toil. These all represent the longing for rest of tired or lazy souls. This is expressed also in Nirvana, in a cessation of the mental process altogether. In later times the absorption ideal of the mystics, the longings to be caught up into the world principle, are expressions of the same effort to escape the wear and tear of individuality. The key note of mysticism is, as Vaughn says, rest, to be blended and lost in God as rivers lose their names and their forms when swallowed up in the ocean.

The heaven-ideals, as expressed in the Christian hymns, are full of these themes. Here rest is the predominant note, as in the hymn—

"O Jesus, bring us to that rest
Where all the ransomed shall be found.
In that eternal fullness blest,
While ages roll their cycles round."

Quite different is the following :

*I'd part with all the joys of sense
To gaze upon thy throne.*

So heaven ideals vary in the individual with fluctuations in the physiological condition, as shown by the returns to the syllabus.

This method of obtaining consolation for troubles, and allaying the ghosts of distressing memories, is, in its nature, similar to the hypnotic suggestion. It is a self applied treatment very like the kathartic method adopted by Breuer and Freud, for the cure of hysteria of psychic origin. Emotional disturbances cause traumatic lesions in the mental life, and though the original cause has often dropped from consciousness, the memory remains submerged and acts as a foreign body in consciousness and induces motor hysterical phenomena. Under this treatment, the patient, in a hypnotic state, is made to confess the cause of the trouble. The intellectualizing of the submerged emotion forms an outlet for the dissociated mental process, and recovery supervenes.

A case quoted by Scott¹ shows this in a slightly different form. The patient suffered from hysterical symptoms resulting from an assault, the disturbance due evidently to a submerged memory. When placed in a hypnotic state he divulged the cause of the trouble, and suggestion that the offender had been brought to justice effected a cure.

The practice of confession as a religious cult, is similar in nature to all these methods of discharge of emotional disturbances, and seems to find here a psychological justification.

The *hypnotic causes* of reverie are many and varied, and include twilight, music (usually sad music), beautiful scenery, moonlight, deep shadows, the dark, gazing at the sky, in the woods, a spring morning, sunset, looking at the hills, the sea, clouds, lying down out doors, sitting in a hammock, swinging, reading, drawing, rocking, driving slowly, riding in the cars, in a row boat, sitting on a haystack, monotonous noise, low murmur of voices, hum of insects, beautiful pictures.

The fact to be particularly noted here is the profound effect of music, nature, and twilight, upon the spontaneous activities of the mind. In 75 cases reverie was induced by the hypnotic influence of natural objects. Cases from returns to a second syllabus illustrate well the effect of this group of phenomena upon the visualizing powers.

F. Good music always stirs me to reverie. A theater seems to open in the brain with a play in progress. I see and hear these creations of fancy even when attending an interesting performance of opera.

F. Music always makes me hear brooks, and birds, and summer winds, in place of the instruments or voices, which I actually hear. I am sometimes taken out of the church, or concert hall, or parlor, by the music and see flowers, butterflies, birds, trees, clouds, hills, and all delightful country scenes. Twilight makes me very happy with a shade of melancholy. Autumn is much the same. Spring rouses me to life and mental activity.

¹Sex and Art.

F. Twilight to me is a picture of something dreary and sorrowful. It is like a painting of one's life that has grown black with age.

F. If I go to the morning exercises at school and hear the music, I cannot attend to my morning lessons.

Heine and Schopenhauer were stimulated to composition by music.

So, too, nature sets free the currents of reverie in the soul. Many cannot study if they sit near a window where they can look out upon the hills. The temptation to day dream is too strong.

F. I learned this (effect of nature upon reverie) when a school girl. I joined a class of school girls with a craze for early morning walks, but I had to give them up or else fail in my lessons, which came in the early part of the day.

A clergyman writes: "In the spring time my mind insists on taking a vacation. I can no more study than I can fly. Books lose their flavor, I must away to the woods and the sunshine."

The returns are full of these themes, and show how closely knit together are these ideals, and nature, music, twilight and seasons.

F., 19. Music, twilight, and spring stir my strongest emotions and highest ideals.

F., 19. Music soothes me, yet it stimulates me to do something good.

F., 19. Twilight draws me nearer to God, and away from the world. It makes me wish to be better.

F., 18. Twilight makes me think.

F., 19. "Songs without words" always suggest an unsatisfied longing, and sometimes bring visual images.

F., 18. Music that is soft and sweet, suggests beautiful scenery, where everything is calm and bright.

These are sufficient to show that the day dreaming and idealizing instincts are very deep and closely related to the most profound emotions.

The Mental Content. In this connection it must be remembered that nearly all the cases were of females, and that only a few years are represented; but some hints are given as to the relation of the reverie life to the real life.

Music leads in the list of subjects around which the day dreams are formed, being mentioned in 90 cases. Posing as eminent pianists, or great singers entrancing vast audiences are the most common forms of this. Then come wealth, 51; oratory, 30; teaching, 24; center of attraction, 19; home, 18; wit, conversation, 18; travelling, 13; education, intellectuality, 11; power, influence, 10; literature, 8; love, 7; beauty, 7; virtue, 7; society, 5; the stage, 4; artist, 3; and a long list of subjects mentioned once or twice each. Though the dreams are often wild and extravagant, occasionally out of all relation to the character and ambitions of the dreamer, they are usually built up of the deepest life interests and longings. The tendency is

always to transcend the limits of possibility. The heterogeneity of ideals mentioned by one individual is sometimes striking.

To illustrate this section one or two cases will suffice. The method is the same throughout.

F., 17. I often sit and dream that I am a great elocutionist or an eminent poet. In my fancy I hold audiences spell-bound with my eloquence. I can hear the applause and I go before the people again and again.

F., 17. I love to day dream, thinking of what I shall do with my money when I become rich. I dream of all the luxuries that money will buy, how I shall help the poor, etc. I think of myself as in a beautiful cottage by the sea, in a luxuriously furnished home, with a large library and everything magnificent.

Thirty-two speak particularly of dreaming of the past, a few dream over past events just as they occurred, but idealization is more common; objectionable features are removed and painful memories are transfigured. The dream projected into the future it is hardly necessary to say is the more common form of these adolescent day dreams. In two cases the dream took the form of a continued story, and was taken up each day just where it was dropped the day before. In one case the story was carried on for several weeks, in the other case for two years.

Two report that sad stories weave themselves in their mind, though the self is not the center of interest, but poses simply as an onlooker.

One case is worth quoting in full.

F. I habitually fall into such moods when no action is called for, as in driving, riding in the street cars, or on the railroad, sitting in church, when the sermon fails to stimulate thought. There is a conscious act of volition, a letting go, as an initiative, and then my ordinary self seems to be simply an onlooker. I am conscious of what is going on and diverted, amused, happy or sad according to the dream, but I do not seem to determine it in any way. I usually keep a hand on myself so that I can cut these fancies off at any moment, as when I am on the street cars. Still I must confess to passing my destination occasionally. A hay stack is the best place in the world to day dream. The smell of the hay is intoxicating, and there is something in the very act of sinking into the hay that is suggestive of lullaby. Lying is always a very much better attitude for day dreaming than any other. Lying in the prow of a boat when some one is rowing you is excellent, also lying in a hammock or on the ground. I can always day dream better on my back than on my side, and better with my arms over my head than at my side. I always day dream before going to sleep, and always dream as soon as asleep. I am quite conscious of the line that shuts the day off, quite as conscious as I am of the line which marks a day dream from an ordinary mood, and, indeed, sleep is not very different with me from day dreaming, the difference seeming to be more in the inability to stop the wandering of my fancy than in a loss of consciousness. I never quite lose consciousness in sleep. Day dreaming makes one practically independent of one's surroundings, always excepting discordant sounds, which are fatal to day dreaming.

The other day I was not feeling well, and I had to lie down for a few hours. Now I hate to be sick, but the feeling is largely cancelled by

the fact that I can indulge to an unusual extent in day dreaming. This day dream was of a young girl, whom my fancy created at the moment. I entered into her thoughts, and sorrows and longings, until I became quite lost in my feeling for her and was not at all conscious of myself in the ordinary way, until I found I was crying over her just as if she were right beside me. The sympathetic feeling has not passed away, and the young girl is now a vivid, present, personality to me, and one of my dearest mental companions. To-day is Easter Sunday. Part of the time I heard the words and felt the music for myself, but part of the time also, and quite as deeply and vitally, I am sure, for the young girl, whose presence was real to me all during the service.

This case illustrates well the literary uses of reverie. Many instances might easily be recalled of authors who saw their characters so vividly, and lived through the imaginary scenes, which they created, so emotionally, that they failed to distinguish them from reality. Dickens was often tormented by the presence of the children of his brain many hours after he had ceased writing.

Perhaps the dangers of reverie can best be mentioned here. With some people reverie no doubt is so habitual that it must be regarded as abnormal. Thought does not find its normal outlet in action, and the life is dreamed, and not lived. The actual appears dull and prosaic, as contrasted with the ideal. Such cases often represent probably an arrested or deficient motor development. As cases in the returns show, reverie is sometimes so persistent in a child as to make voluntary attention impossible, or better perhaps, attention is so weak, that thought is always reverie. In one instance a girl of 12 was obliged to leave school on account of a persistent, dreamy state of consciousness.

Féré¹ says that a dreamy mental state is sometimes voluntarily induced, and later this habit of mind becomes involuntary.

Numerous forms of pathological dream states are described in psychiatric literature. *Dämmerzustände* and *Halbtraumzustände* are frequently mentioned by the Germans. One form of this is particularly interesting. It is essentially a traveller's disease. Young students and soldiers in foreign lands are particularly prone to it, in whom fatigue sometimes induces a state of mind-wandering in which home scenes come out so strongly as to repress the present existence altogether, and the man wanders off in a semi-dazed condition.

Sir J. Crichton-Browne describes mind wanderings and peculiar half dream states, as prodromal to epileptic attacks. Another form of dream state spoken of by the same author is of interest. It is characterized by a feeling of strangeness and unreality of surroundings, "as if all things were and were

¹Pathologie des Emotions.

not," as Tennyson says in "The Princess." A case in our returns describes a state in which "men seem to move around me like living shadows." Another case, "The world and myself seemed unreal. I seemed to live in a universe a few feet in diameter; all beyond felt shadowy and vague." These states when extreme are no doubt pathological in character, probably of neurasthenic nature, but they have a psychological interest, for they may throw light upon the sense of reality, and the feeling of self existence.

Reverie, when a habitual state of mind shades by degrees into states of divided personality, a process the first stages of which are illustrated by the case of a normal individual, which is given above. It may be questioned whether there is not always a danger here of formation of "submerged zones" in the psychic life, when thought is too much divorced from action, or when reverie is carried on habitually, in such a manner as to shut out the feeling of reality, the sense of the here and now, which is mediated by impressions from without, and the feeling of bodily contact.

The awakening is brought about by the following agencies: noise, mentioned 44 times; spoken to, 36; remember a duty, 14; spontaneous, 10; visual impression, 7; change in the current of thought, 2; something in the dream suggests the waking life, something unpleasant in the dream. When day dreaming accompanies automatic work, a pause in the movement is often said to bring the reverie to a close. The awakening came in 86 cases from stimulus received through the ear, from internal causes, 33; from visual impressions, 10; from touch, 6. Twenty-nine say that they awake with a start, 6 do not, 10 must be spoken to loudly or several times, in 5 cases it is said that calling does not awaken; they must be touched. Thus the reveries seem to be of all degrees of depth, some are disturbed by the slightest sound, with others the separation from the here and now is more complete. The feeling on being awakened is shown by such expressions as "awake with a sigh," "it is very hard to take up my daily work again," "as if coming from a sound sleep," "dazed," "feel as if I had been far away," "very sorry to be called back."

In reply to the question as to the similarity of the day dreams to hypnagogic phenomena, there were 47 answers. Thirty said reverie-dreams very much resembled the experiences on falling asleep, seventeen said they did not. Points of difference were mentioned in the negative answers. Five said the reverie pictures were more vivid than the hypnagogic, two that the hypnagogic images were more likely to be unpleasant. One says, "on falling asleep I review events, in reverie I idealize them." "Hypnagogic thoughts are of more recent events," says

another. "I have more control over day dreams." "I never see familiar places in day dreams, as I do when falling to sleep."

There is evidently in these papers some confusion as to exactly what is meant by hypnagogic images, but the general conclusion may be drawn that the idealizing element is more often lacking in these falling-to-sleep reveries. The day dream is more teleological, more constructive after a definite plan. The true hypnagogic image belongs to a lower stratum of consciousness than reverie, is fragmentary, and is not subject to control.

II.

The present stage of evolution in man is characterized chiefly, as all admit, by evolution in mental adaptation. Mental processes are undergoing the same selection which was once centered more particularly upon physical characteristics. The criterion of the value of any mental characteristic is its relation to the practical needs of life. Is adolescent day dreaming a characteristic such as selection would in the long run tend to preserve, or is such activity a waste product of growth? As far as our data go, day dreaming appears to be a habit common to normal minds, and to be particularly pronounced at adolescence in its idealizing character. These ideals seem also, although often extravagant and unattainable, to have a direct relation to the growth instincts of the mind.

With the incoming of almost a new personality at adolescence, the mind is thrown out of harmony with its environment. There is a storm and stress period, with intense longing to be and do. This intense, but vague unrest, is the raw material out of which later on life interests are to be formed. At this time day dreams appear as the first spontaneous expression in consciousness of instinct feelings, which are impelling to action, and which at this stage are very apt to become perverted. If the growth is normal, day dreaming should shade over imperceptibly into definite plans, and ambitions and action, and they form, we believe, an important step in the process of adapting to new conditions of life. The question may fairly be asked, whether the range and fervor of these day dreams are not a measure of the growth force and adaptability of the mind. In its dreams the mind tries all things, enters all walks of life, forms new associations, and, as in the race, these ideals represent the hopes and longings upward of the soul.

Biography is full of cases of day-dreaming boys who in later years developed great genius. It was not, of course, because of their day dreaming that they became great, but rich, full minds show this preliminary stage, which we believe is common to all normal minds, more strongly marked. Newton and Mozart

were both day-dreaming youths, and the former was in his boyhood believed to be of less than average intelligence.

Lancaster found that 80% of normal adolescents love solitude, 80% of defectives dislike to be alone. The love of being alone means there is a fertility of resources within. How often has solitude been the cradle of a system of philosophy or of a religion.

In the hope of discovering cases of abnormal day dreamers teachers were asked to describe persistently absent-minded children. Of the ten described, eight were apparently healthy, normal children, but with very strongly marked likes and dislikes as regards studies. One teacher of wide experience, without giving specific cases, generalizes as follows: "Boys of this type usually show decided preference for some study, usually drawing." In two cases, persistent day dreamers were regarded by the teacher as mentally deficient. One of these, on being aroused from one of his lapsed states, and asked what he was thinking about, said he was "just looking," indicating a very obvious difference between the objective distraction of a contentless mind and the subjective distraction of a mind overflowing with reveries.

It seems probable that thought is easier and better for this preliminary play process. But it must be clearly borne in mind that the normal day dreaming is a play period, a preliminary process, and that there is a clear line of demarkation between the adolescent day dreamer and the professional day dreamer, who is abnormal, and whom Hirsch describes as degenerate. His mental growth is arrested at an adolescent stage. "In later life," says Hirsch, "they fall into that class of minds whom we call dreamers, enthusiasts, and mystics. Their luxuriant fancy, directed by no purposive will, or intellectual plan, attracts them to whatever is occult, incomprehensible, and wonderful. From his youth up such a man is not habituated to look plain facts in the face, but gives himself up to building castles in air and useless trifles. He lives in dreamland."

Adolescent day dreaming appears to be a clearly marked case of the ripening of an instinctive tendency toward, or interest in, a particular subject, self-idealization. This interest is expressed in automatic mental action; effort thought comes later. How far does this same order hold for thought in general; that is, will a man think best about what he has imagined and dreamed most? Is there a stage in the mental growth which can be called automatic, being the period of inception of many mental interests?

That automatic activity precedes volition is clearly recognized in motor activity. Out of the great mass of inco-ordinated motor reflexes and automatisms, volition selects those fitted to favor the survival of the organism. No action can be performed

voluntarily which has not previously been done accidentally. Play periods are also recognized as stages in such activities as writing, drawing, talking.

The best students of animal plays now recognize them to be propædæutic. Their function is to stimulate growth, and exercise functions which will later be of use in the serious business of life. They differ from the latter in that they are carried on for their own sake, and spontaneously. No doubt the length of these preparatory periods tends to be increased by selection, so that many functions tend to ripen at longer and longer periods before their use for purposive ends begins.

In the same way reveries are to be regarded as the play periods of the intellect. They are the first expressions of interest, they stimulate growth and new associations, and lay out the lines for voluntary thought. Those of the *Anlagen* or automatisms of the mind which serve the ends of life are preserved, and intellect grows out of the vagaries of imagination. Mind is domesticated reverie. If the analogy to motor activities holds, its strength depends largely upon the richness of its play activity.

That the child's mind acts in general more automatically than the adult's, hardly needs proof. There is more tendency to dream out beyond facts. With both the child and the savage, the real world, the ideal world, and the dream world, are but imperfectly distinguished from each other. There is a constant tendency toward entification of subjective phenomena. The child does not correct his hallucinations, and he often contributes too much to his perceptions, he confounds his reveries and dreams with his experiences.

Our returns are full of such cases, *e. g.*

F., 24. I once had a whitewashed ceiling over my bed, that was a whole picture gallery.

F. When a girl of seven I saw a majestic figure sitting in the clouds and writing in a huge volume. I ran screaming to my mother, never doubting the reality of the vision.

F. I took my favorite heroes out of books and carried them along with me in all my adventures, and I always knew that I was day dreaming more than I ought.

F. So vivid were my dreams at this period (7 to 11) that on recalling them now, it seems like the remembrance of a real occurrence.

The wonderful fertility of the child mind, in seeing things in clouds and fire and water, shows how slight the stimulus may be which sets off the trains of mental activity.

The growth of the mind has often been compared to the growth of science, and in many respects the analogy appears to be correct. In general, myth, imagination, and speculation precede investigation. In the accomplishment of a definite mental task, the same process often takes place in the individual mind. Reverie is often declared by thinkers to be the best preparation for hard

mental work. The first glimpses of great truths have often been caught in reverie when the mind was distracted from work. Helmholtz says that his best thoughts came to him as he was wandering in the Alps.

A gifted writer says: "A day or two of solitude and reverie in the woods is the best preparation I can have for any mental work."

A scientist says: "To dream over facts is with me the first step. I study them later."

Stedman says that poetry has always blazed out the way for investigation. Dreamings out beyond the horizon of facts show the tendencies of thought. The same is expressed in such phrases as "Theories come from the soul, and investigations from the sense world," and "The worst errors of the speculators are often better than the truths of the investigators." "The investigator, if he would leap to greater discoveries, must have poetic insight and imagination. Those of our geologists, biologists, and mechanicians, who are not poets in spite of themselves, must sit below the seers, who by intuition strike the trail of new discovery. The poet has been prophetic in almost every kind of knowledge, evolution not excepted."

This expresses what we have found to be true in adolescent day dreams, that the first expression of interest is in imagination and reverie.

Thought must be regarded as in some way a unifying process, which brings the brain areas into closer relations. If Flechsig's map is correct, this is clearly shown on the physical side. Voluntary thought, vigorous mental work, uses the association areas, and brings the brain forces into co-operation.¹ The motor and sensory parts are both involved, tension and attention go together, and there is an erethism more or less general of the highest level. Whether in such states there is actual breaking of contact with lower parts of the brain cannot, of course, be determined, but the prevalence of motor and mental automatisms show that there has been a release of inhibitory control. Hughlings-Jackson's well-known theory of levels provides for a more and more independent action of the different levels as evolution goes on. Parish thinks that when one brain area is attentive, other parts are dissociated. The occurrence

¹ The mind of the child is less closely co-ordinated than that of the adult, corresponding to different stages in the development of association areas. For the child the ideal mental activity is frequent change in order to develop all possible functions. Perhaps for the highly developed, more perfectly co-ordinated adult brain, the ideal would be such mental activity as would bring all brain areas into co-operation and exhaust all automatisms. Such a view offers a ready explanation of the complete psychic decapitation, which is often displayed in the recreations of intellectual workers.

of extraneous associations, which occur often during intense thinking, indicate the possibility of automatic neural processes accompanying the higher, and unknown to consciousness. This is a rough picture of what occurs in what we may call absorption, on the highest level of consciousness. But absorption states may occur on a lower level of consciousness. This constitutes what in general we designate as reverie. Then the highest association areas are inactive apparently. On this, which may be termed the automatic level of consciousness, there is more independence of single groups, so that incipient reveries may dominate consciousness, yet with a low tension. The mind then acts automatically, without effort. Often the motor element is not involved at all, as has been shown above.¹ When, however, the intensity of consciousness rises to an abnormal height, we again have the mind acting automatically, in all degrees of efficiency and deficiency. Automatic mental actions occur, then, under two exactly opposite conditions, hypotension and hypertension of consciousness. In the latter group belong all the sthenic ecstasies, second breath, mania and the like; in the former, the reveries, dementia, etc.

These two conditions are well illustrated by Oelzelt-Newin's description of the two types of genius.

One is in a condition of reverie; there is anæmia, the muscles are relaxed, the face is pale, the eyes are closed or fixated upon a distant point.

The condition of the other is exactly the reverse: there is hyperæmia, the body is erect and tense, the eyes glisten.

These are the imagination-states, in which, according to this author, the mind thinks original thoughts.

If this statement of the automatic action of the mind is correct, and reveries are most often spontaneous activities of lower levels, we must now look for the origin of these activities, which the dream life and the imagination make use of. We find that in the individual life memories become detached or submerged and rudimentary. This is well illustrated by the dream phenomena, spoken of as the traveller's disease in a preceding section. Both in the life of the individual and of the race we find diminishing psychoses. We are not concerned here with the process, whether by a Lamarckian use and disuse or by selection. The only explanation which is large enough to account for many of all the activities of the automatic levels of

¹ Possibly in exceptional brains of a high order there occurs such automatic action of the highest level. Inspiration physiologically expressed may be regarded as a highly anabolic condition of the highest level. Stedman says there is an imagination of the intellect and its utterance is of a high order, often the prophecy of inspiration itself.

consciousness is that they are survivals, at least in the form of instincts and innate tendencies, of psychoses, some of which once played more important parts in consciousness than at present. Here we must look for the origin of much of the automatic action and many of the peculiar habits of the mind. Such *Anlagen* of the mind have doubtless different rates of growth and degrees of persistence, but their development comes from within. Experience may add to them furnish the conscious content, but the motive force is the inner growth.¹

To speak of reveries as chance plays of the sensory apparatus is but a partial explanation. A part, perhaps a large part of what we call mental distractions, have such an origin as is indicated here.

We have found that day dreaming is a common phenomenon of normal adolescent minds, and have reached the conclusion that such automatism (which on the neurological side may be regarded as rapid growth, formation of new association paths in a high anabolic nervous structure) naturally precedes what we call effort thought, that the function of reverie, and of imagination in general, is to exploit the nascent organs of the mind, and to widen out the consciousness of the individual, and to serve as preparatory steps to more voluntary mental activity.

Some Pedagogical Suggestions. If the conclusions reached in the preceding sections are well founded, there can be little doubt as to the general nature of the pedagogical application. If "imaginations" are preliminary steps in mental development, attention must be given to determining their normal growth. They become dangerous only when hypertrophied; then there is arrest. It would be unnecessary now to prove that the proper functioning of the higher stage depends upon the completeness and fulness of the preparatory process.

The periods of the greatest activity of the imagination are not clearly determined. Certainly at adolescence spontaneous action of the mind is clearly marked and thought is often creative. In regard to the early nascent period of the imagination, usually placed at 4 or 5, we have no data at hand. Some few studies tend to show that from 8 to 10 there is a rapid rise in the power of constructive imagination. Wherever crystal gazing has been practiced as a religious cult, children of 8 or 9 have been regarded as the best seers. At 9 or 10 there appears to be an unusual spontaneous activity of visualizing powers, as is shown by the data given in the appendix to this article. The same study indicates in a general way that children in the third grade (9, 10 and 11) are more original than children a

¹ See Some Mental Automatisms cited above.

little older. Mrs. Barnes,¹ in her study of the historical sense in children, finds that imaginative inference has its sharpest rise at 9 and 10 and reaches its highest point at 12; again at 16 there is an increase. Crosswell finds imaginative games most frequent at 4 and 5 and 9 and 10, with the difference that in the early period, the imagination is more imitative and in the latter more creative. The significance of this imagination period (if it exists) is not clear. Oelzelt-Newin² thinks that the sudden appearance of a group of instinctive fears at 5 is a great stimulus to the imagination. It is possible that some such nascent instincts underlie the second period. The year from 8 to 9 the doll interest is at its maximum, the love of animals and social interest are very strong also. Sometimes also a strong affection for the other sex makes its appearance at about this time. There are some historical examples of this, *e. g.*, the case of Byron. Lancaster³ quotes a case as follows: "A real person was desparately loved for the space of three months at nine." Oelzelt-Newin treats of this phenomenon at some length. He finds that at about the eighth year the imagination has a rapid growth on account of the appearance of new impulses of a sexual nature which have "bestimmte körperliche Parallelerscheinungen." This is not to be confounded, he says, with puberty, which never comes so early. If this is true, there is an important field here for further pedagogical study. It is possible that this author has mistaken cause for effect, and that the psychic phenomena excite the physical. There is a tendency under the influence of an intellectual environment for the sensory development to be pushed ahead of its corresponding motor termination. Is it not also possible that many mental traits, which in the race development have grown out of, or at least followed sex, have been accelerated and have nascent periods of growth anteceding the physical side and which perhaps act upon the physical, either to accelerate or retard? In this way higher mental characteristics which are of importance are given a longer play period. The doll interest, representing both a parental and a social instinct, may be mentioned as a possible example of this.

The question may fairly be asked whether pedagogy has not failed to give full value to the spontaneous activities of the mind. It is possible that there are periods in the mental development when such play activity should take precedence over all others, when the mind is not especially adapted to the systematic acquirement of facts or the logical treatment of them.

¹Studies in Education, p. 52.

²Oelzelt-Newin: Phantasie-Vorstellungen, p. 66 seq.

³Psychology and Pedagogy of Adolescence: PEDAGOGICAL SEMINARY, Vol. V, 1, p. 88.

During such periods, which may correspond on the physical side to times of most rapid growth of structure or associative connections, it is possible that too much forced activity may antagonize growth.

How can the imagination be trained? In the first place ought not more attention be given to the visualizing powers? Galton says: "I believe that a serious study of the best method of developing and utilizing this faculty, without prejudice to the power of abstract thought, is one of the desiderata of the as yet unformed science of education."

The literature of biography, history, myth and story is, of course, full of material, some already adapted for use in schools, some which might easily be arranged. Every one, for instance, recognizes the value of telling stories to children, but ought not story telling be made a more important part of school and home teaching?¹ The mind of the child is more often starved for want of good stories, which will stimulate the imagination and stir the emotions, than perverted by a superabundance of stories. President Hall has emphasized the need of the professional story teller, whose work would be simply to tell stories to children. There is certainly a charm, and mystery about the told story, that the read story utterly lacks.

The scene which the mother of Goethe describes is the ideal pedagogy in this respect. She says: "I could never be tired of telling them, as long as he was not tired of listening. I represented fire, water, earth, and air as beautiful princesses, and gave a meaning to all that goes on in nature. I believed in it myself more implicitly than my listeners did, and when we pretended there were roads between the stars, and that we should sometime live in stars, and thought what great spirits we should meet up there, nobody was ever more eager than I for the hour of story telling with the children, nor more vexed when some invitation I had received prevented it. There sat I, and there was he with his great black eyes devouring me, and if the fate of any favorite did not go right according to his sense, I could see how the angry vein would swell in his forehead, and how he would choke down his tears. When my imagination fell short it would often be patched out by his." Ought not children to be encouraged to tell stories, and write stories? More of this might be done in school than at present. The imagination might be actively employed, also, in description of imaginary animals, scenes, games, etc.

This appears to be a line of natural interest to the child. A

¹There is no doubt that in all lines of work which are mentioned here very much is being done. What is urged is a more systematic training of the imagination, with more definite knowledge of its psychological importance.

class of children from 8 to 10, who were asked to describe an imaginary animal, showed very great interest.

The treasures of biography have hardly been opened up. The nature of the day dreaming at adolescence indicates the great service which properly written biographies might perform, both in the way of teaching history, and as stimulus to the adolescent mind. This, perhaps, is the most clearly and definitely indicated pedagogical conclusion from our data.

Drawing, also, may be made very useful in training the imagination. Nearly all imaginative children, and especially the dreamy children described in our returns, were said to be particularly fond of drawing.

And then poetry, which seems to have a place all its own in imagination training. Schopenhauer defines poetry as the art of exciting by words the power of the imagination. Verse is emotional, it stirs the imagination even if there is not a word of sense in it. Music has this effect perhaps as strongly marked. Young children are wonderfully susceptible to the effect of rhythm. A case is cited by Bolton¹ of a boy of five who was so excited by a passage from the *Pied Piper of Hamelin*, that he would run and hide.

These were the words:

"Into the street the piper stept,
Smiling at first a little smile,
As if he knew what magic slept
In his quiet pipe the while."

The effect upon the more mature imagination of the following lines from Bryant's *Waterfowl* is perhaps not less marked.

"Through the desert and illimitable air
Lone wandering, but not lost."

A detailed study is needed of the effect of meter upon the child mind. We need a psychological study of poetry for children and poetry by children. Young children often talk in rhythm and rhyme.

Then at adolescence comes the poetic period par excellence. Here, also, the study is incomplete. We have few data bearing upon the poetic instincts of the adolescent, but that there is a possibility of a more systematic utilization of poetry, with special reference to the training of the imagination at this period, can hardly be doubted. As to the writing of verse, we have many historical cases of men who have become distinguished in lines of intellectual work, which are commonly supposed to be antagonistic by a poetic temperament, who in their youth wrote poetry. Is the impulse to seek expression of emotion in verse an instinct of normal adolescence? Can it be utilized? It

¹ Bolton: Rhythm, *American Journal Psychology*, Vol. VI, p. 165.

would seem that a little of this is a good thing ; that it widens out the imagination, helps to express deep instinct-feelings, and makes for a healthy kind of sentimentality. Stedman speaks of the "process by which the epic and dramatic chieftains appear to reach their creative independence. As a preliminary, or at certain intervals of life they seem to rid themselves of self-consciousness by its expression in lyrics, sonnets and canzonets."¹

To sum up this section, it seems as though the imagination ought to be allowed freer range. We have here, of course, the perennial problem to determine just how far the mind should be allowed to run wild, to be original ; how far it should be trained toward conventionality. But does it not seem that pedagogy has in the past stood in the way of originality, of creative thought? Has it not gone too far in its conventionalizing tendencies? It is pleasant to think that the mind tends to be creative. Should there not be more emphasis put upon the training of the essentially creative faculty, which is the imagination? Would it not keep the mind more plastic and help prevent that early crystallization that makes new thoughts impossible?

APPENDIX.

It was intended, in the second half of this paper, to study imagination genetically, but the work has not been carried out. One group of data which was gathered is, however, regarded as of sufficient value to present. The natural starting point for the study of the imagination appears to be in such phenomena as the cloud fancies and imaginings about sun, moon and stars, in which children's minds are so fertile. Here are myths no less ingenious than those of history, and metaphors not different in kind, and often not in quality, from the highest flights of poetic imagination.

AN IMAGINARY ANIMAL.

Six hundred and forty children were asked to describe in writing an imaginary animal. Of these, 330 (148 boys and 182 girls) understood the question well enough to make an intelligent attempt at an answer. Most of the remainder understood imaginary as representative rather than constructive, and simply described some animal they had seen. The length of the descriptions, using as a unit a single phrase, or what might better be called a single conception regarding some part of the animal, or some quality of the whole, as "long, slender legs," "one eye red, the other blue," is as follows : average for boys, 5.58 ; for girls, 5.66.

* For fear that teachers would suggest too much, they were

¹ The Nature of Poetry, p. 10.

asked to give no explanation. In one school, the effect of accidental suggestion was very noticeable.

The average length of replies, according to age, was as follows:

Seven and eight, boys 6.80, girls 6.71; nine, boys 5.52, girls 4.95; ten, boys 5.37, girls 4.40; eleven, boys 5.10, girls 4.65; twelve, boys 4.10, girls 5.33; thirteen, boys 6.28, girls 6.07; fourteen to seventeen, boys 6.83; girls 8.22.

The tail is the most popular member, being described 216 times; next comes the body (these include shape of body, description of hair, feathers, etc., 188); head, 187; legs, 158; eyes, 135; size, 97; feet, 83; horns, 73; ears, 71; mouth, 41; teeth, 29; nose, 28; neck, 22; face, 8; mane, 6; tongue, 4; trunk, 4; tusks, 2; nails, 2; eyebrows, 1.

Size of the Animal. Large, tall, 19 cases; large as or larger than an elephant, 10; large as cow, 10; horse, 9; dog, 5; bear, 3; hippopotamus, 3; sheep, 2; man, lion, fox, camel, lizard, giraffe, warship, 2 each; pig, 1. In some cases dimensions were given as follows:

Ten cases, 5 to 10 ft. long or high; 7, 2 to 4 ft; 12 ft., 13 ft., 20 ft., 30 ft., 800 ft., 525 yds., 2 rods, 1 ft. high, $\frac{1}{2}$ inch, 1 inch, one each; one was mentioned as small. No one described a microscopical animal, and only two based newness upon unusual smallness.

Color. Thirty-four animals were spotted or striped, with various combinations of colors, brown, 18; black, 16; white, 15; green, 14; red, 12; yellow, 9; gray, 4; pink, 4; blue, 2; plaid, 1; dark, 1; beautiful color, 1.

Eyes. Color was given in 33 cases, 11 were green; large, 32; eyes like some animal, 21; glaring, fiery, etc., 10; two eyes, 12; other numbers from 4 to 500, 11; one eye, 7; small, 7; round, 1. One drew a picture of the eyes.

Head. Like some other animal, 119; large, 33; more than one head, 21; round, 6; color, 3; square, 2.

Ears. Like some other animal, 23; long, 18; small, 7; one long and one short, 1; no ears, 1.

Horns. Like some other animal, 13; two horns, 10; no horns, 9; long, 7; colored, 6; large, 4; three horns, 3; one horn, 3; silver, under his mouth, in his mouth, horns in all directions, horn on one side, ear on the other, middle of back, top of head, 10 horns; 5 on one side; 2 on one side; 4 horns; one at end of nose.

Horns seem to have a particular interest. The number of times they are mentioned seems large, when it is remembered how few species have horns. They are also, as will be seen from the above list, peculiarly variable organs.

Neck. Long, 17; like giraffe, 2; slender, 1; beautiful, 1.

Mouth. Large, 17 ; like some other animal, 7 ; long, 3.

Teeth. Sharp, 9 ; large, 5 ; long, 4 ; like some other animal, 3 ; small, 1 ; one on each side, one in upper jaw, one in lower.

Tail. Like some other animal, 84 ; long, 48 ; short, 17 ; 3 to 900 tails, 16 ; bushy, 14 ; color, as green, pink, 8 ; large, 7 ; little, 5 ; no tail, 5 ; some had hay, straw, flowers, feathers on the tail, others were tipped with point, fish-hook, ball, one had a tail in the back of his neck.

Body. Like some other animal, 92 ; small, 8 ; large, 7 ; long, 4 ; square, 1. The body seemed a very uninteresting part of the animal, and little originality was shown here.

Skin, Hair, etc. Hair, 9 ; feathers, 6 ; fur, 5 ; pins, 3 ; lace, 2 ; clock, carpet, sheds, straw, scales, wool, no hair, one side hair, one straw, horns all over, one each.

Legs. Various numbers from 1 to 10,000, 68 cases ; like some other animal, 48 ; long, 22 ; slender, 14 ; short, 12 ; front legs short, hind legs long ; front legs thin, back legs stout ; wooden legs ; no shape, except round ; double rows of legs, etc., etc.

Feet. Like some other animal, 35 ; webbed, 15 ; various numbers from 1 to 100, 14 ; claws, 6 ; small, 4 ; large, 3 ; like a hand, 1 ; two large and two small feet, 1.

Motion. Motion is mentioned in 44 cases, great speed is mentioned 13 times, *e. g.*, fast as a bicycle, as a train, etc. One animal can run, swim or fly, one can jump 150 feet, one runs tail first, two cannot run at all, one has an electric motor to propel him when tired.

Feeding habits are mentioned 28 times. The animals eat : anything green ; birds, boys, teams, brick and eggs ; boys, chalk, cats, and dogs ; birds and stones ; bad boys ; raw meat and rags ; swill ; grass and clover ; can't eat ; anything ; stone walls ; leaves ; other animals ; hay ; worms ; snakes ; ice.

The habitat is given in 16 cases, age in 2 (95 and 100 years), noise, 13 times ; general moral character, 7 ; 3 are gentle and 4 are wild or look mad.

In 37 accounts by the older children, taken at random, 7 have followed a definite order, beginning at the head or tail, and describing the parts in order. In 54 papers by the younger children, examined with special reference to this point, only two have followed any apparent order. They are quite as likely to begin with the eyes, then describe the tail, then return to the head, in the meantime forgetting what was said at first. In nearly all papers description consists of touches at salient points of interest. Often one idea is made to go around for all the parts mentioned. Points where no chance for originality was seen were omitted altogether.

The most common production is an *animal made up of parts of different animals*.

These are often strung together by a kind of speech automatism, without attempting to form any picture of the creature as a whole.

The younger children, on the whole, produce a more impossible animal than the older ones. It is likely to have wooden legs, glass eyes, to be trimmed with lace, to be pink, blue or some unusual color. The older children conform more closely to natural animal architecture. *Size* comes next as a means of originality. The animal is built a good deal like some domestic animal, on a large scale. There is no attempt to make an unusually pretty animal. They are nearly all grotesque and dreadful.

Another new species is the animal with members multiplied or displaced. He has more than the usual number of eyes, heads, tails, or he has a tail in the middle of his back, or a horn under his chin.

Where these different plans are mixed, great size is usually the most constant feature. Another form of newness is asymmetry. The animal has his eyes, perhaps 10 in number, all on one side of his head; or one long ear, and one short one. Among the younger children color patchwork forms an idea. In general a single idea is carried through the whole description, though there are many exceptions to this. The older children more often use a number of distinct ideas.

The following are fair samples of the methods employed.

B., 11. I can see an animal with a head like a dog, a tail like a fox, a neck like a cat and legs like a rooster.

G., 11. I can see an animal when I close my eyes. Its eyes are pink. It has yellow stripes all over its body and a green tail, and an orange color mane. There are ferns out of its body tied with red ribbon. Its teeth are made of shell. I can see the whole of it at once.

B., 15. He lives in the sea. He is a large, brown animal, with large, green eyes. His mouth is large enough to swallow a ship. He has six legs larger than elephant's legs, and fins with which he swims. He is a very ugly looking monster.

G., 14. He has four black eyes, four horns, one at the end of his nose, three tails, and four legs.

What does the child mind do when it is confronted with the task of creating something new?

Doubtless the expression, "an animal," tends to call up some more or less clear visual image of a creature, some specific animal. This serves as a framework to build upon. Nearly all the younger children say they can see the whole of their animal at once. This is less frequently mentioned by the older children. Still there is a very evident failure to conceive the

animal created as a whole. Parts are often described in ways which are mutually exclusive. There is little attempt at methodical description, and no apparent knowledge of the fact that a description of four or five disconnected parts does not convey a definite picture to the reader.

HYPNAGOGIC PHENOMENA.

Eight hundred and twenty-six children were asked to describe what they see at night after the eyes are closed and before falling to sleep. 58.5% of the children from 13 to 16 yrs. see things at night; 12 yrs., 59.4%; 11 yrs., 62.2%; 10 yrs., 65.0%; 9 yrs., 62.6%; 7 and 8 yrs., 60.0%; 6 yrs., 64.2%. In the first grade the children were questioned separately and their answers written by the teachers. Although these figures indicate that there are more of these visual phenomena, the younger the child, there are other facts which must be taken into account, *e. g.*, the tendency to confuse these entoptic phenomena with dreams, which may be greater in the younger children.

Stars were most frequently mentioned, being spoken of in 151 cases, colors 145, people and faces 77, animals 31, scenes of the day 21, flowers and fruit 18, pictures 15, God and angels 13.

In answer to the questions as to what they had ever seen before falling asleep which frightened them, and what that pleased them so much that they had tried to see it again, the following were mentioned:

Frightened: by people, 156 (27 were ghosts); animals, 75; things, 11; dark, 5; accidents, 5. Pleased: by people, 146 (17 were angels); things, 52; animals, 18; colors, 28; scenes, 14; flowers and fruit, 9; heaven, 1.

The age at which these occurred was given in 302 cases. Three years, 3; four, 6; five, 10; six, 36; seven, 12; eight, 30; nine, 61; ten, 81; eleven, 40; twelve, 18; thirteen, 5.

This, taken in connection with the fact that the largest per cent. of the cases in the table given above is found at ten years, may possibly indicate a peculiar sensitiveness of the visual centers at about this age. Further data are needed, however, to confirm such a conclusion.

There is probably an earlier period, also, in which these phenomena are prominent. The point raised here is whether there is a rapid rise again at 9 or 10.

In preparing the above paper many obligations have been incurred. Thanks are due to President Hall for the subject, and for assistance in the work; to Dr. W. H. Burnham and Dr. E. C. Sanford, for suggestions and criticism.

Special acknowledgements are due to the following, who have

contributed to the returns: Miss Lillie A. Williams, of the State Normal School, Trenton, N. J.; Principal Purington, of the Maine State Normal, Farmington, Me.; Miss Stickney, Hughes High School, Cincinnati, Ohio; Mr. Noble Harter, Supt. of Schools, Brookville, Indiana; Supt. C. E. Meek and Prof. B. A. Ogden, of the schools of Terre Haute, Indiana; Prin. A. B. Guthrie, High School, Bedford, Indiana; Supt. C. N. Peak and Miss Martha Dorsey, High School, Princeton, Indiana; Supt. C. F. Carroll, Principals Joseph Jackson, Emma A. Porter, Edith W. Todd, and many teachers of the Worcester Public Schools.

THE ONLY CHILD IN A FAMILY.¹

By E. W. BOHANNON, Fellow in Psychology, Clark University.

The present study was briefly outlined in an earlier one of "Peculiar and Exceptional Children." Forty-six of the 1,001 individuals described were named as "only children," though none of the questions of the syllabus asked about such children, either directly or indirectly. It appeared, therefore, that only children are either more numerous than usually supposed, or that they are much more frequently distinguished by peculiarities than children generally.

The statistics of Ansell² are of interest in this connection. They relate to families of England and Wales, and although they may show a higher average fertility than we have a right to claim for this country, they are valuable for comparative purposes here. He found in 1,767 fertile marriages contracted at an average age of about twenty-five years that, after allowing sufficient time for fecundity to show itself, there were 131 unions resulting in only one child, or one out of every thirteen of the fertile marriages. The average fertility of the 1,767 marriages were six. Thus the proportion of only children which they show is one in every 78, while the proportion found among the 1,001 "Peculiar and Exceptional Children" is one in less than every 22. A marked tendency to peculiarities was therefore suggested for only children.

In the second place, after arranging the 1,001 reports into three groups, to indicate that the peculiarities were "advantageous," "disadvantageous," or "neutral," it was found that two-thirds of the 46 only children belonged to the group having "disadvantageous" traits. Furthermore, this group represented but 448 of the reports, or considerably less than one-half of the entire number. This offered the second suggestion, indicating in an emphatic manner the general character of the peculiarities of only children as a class.

¹ I am indebted to President Hall for valuable suggestions, and to Dr. W. H. Burnham for helpful criticism, made in behalf of the present study. I am also under very great obligation to all those who have co-operated by sending in reports of their observations, but especially to Miss Lillie A. Williams and her students of the State Normal School at Trenton, N. J., and to Prins. E. O. Holland and F. M. Ingler, of the High Schools at Rensselaer and Marion, Ind.

² Duncan: Sterility in Women, p. 4.

In the third place, it was strongly indicated that they have less social ability than other children, and that their relations with others, especially those of corresponding ages, are characterized by a greater amount of friction.

Fourth, it was apparent that they very often indulge in imaginary companionship to compensate for inadequate real companionship.

Fifth, unusual precocity was indicated.

Sixth, it appeared that they neither enter school so early, nor attend as regularly, as other children.

Seventh, it was suggested that the only boy, the only girl, and the youngest child, have many of these traits in common with the only child.

Eighth, and finally, it was stated in nearly every instance that they were indulged to an unusual degree.

These suggestions, though derived from a very limited number of cases, were so emphatic, and are of such decided importance, if generally true, that it was determined to ask for information of a more detailed and comprehensive character. Although the number of returns received has not been great enough to warrant the assumption of general validity for conclusions derived therefrom, it is strongly believed that a number sufficiently large to give such a basis for inference would not yield materially different results. Excepting the 46 reports already referred to, the study is based upon answers to the questions of the following syllabus.

THE ONLY CHILD IN THE FAMILY.

Give age, sex, nationality, and describe the temperament, complexion, and general health of the child briefly. Has he brothers and sisters dead? If so, how many? Is he the first born? How long did the others live? Does the child go to school? Regularly? Commenced at what age? Get along well with other children and in work? How much time does he spend in play? The favorite games? What plays at home? What are the child's best traits? Worst traits? Is he precocious or dull? Has he any mental or physical defects? Name them. What subjects best in? What poorest in? What has been the home and school treatment? What treatment do you recommend?

Age of parents at birth of child? How long had they been married at the birth of child? Are the parents still living? Health, habits, occupations, temperaments and position in life? How many brothers and sisters had *they*? Do they (brothers and sisters) have good health? In so far as above questions apply, describe twins, the only boy, the only girl, and the youngest child, in families.

State anything else you may think to be due to the fact that they are the only child, only boy, only girl, the youngest child, or twins.

CLARK UNIVERSITY,
Worcester, Mass., March 30, 1896.

Altogether, 481 children are dealt with in the study. 381 of these are only children, 54 are only boys or only girls, 32 are the youngest children, and twelve are twins. The reports for the 381 only children are direct and practically complete answers to the questions of the syllabus in 256 instances, while 81 relate only to health, and the other 46, as has been indicated before, come from reports on "Peculiar and Exceptional Children," and contain information about age, sex, nationality, health, heredity, conduct, and home treatment. The 81 were made by members of Clark University, 95 were made by the students of the High Schools at Rensselaer and Marion, Indiana, and 259, excepting a small number of individual reports, came from the students of Miss Williams in the New Jersey State Normal School at Trenton.

Unless otherwise stated, any statistics that may be presented, refer only to only children, of whom it may again be said that there are 381 mentioned under at least one of the rubrics. Thus the sex is given in each case but no other point is mentioned 381 times. The number of children referred to will be indicated as the various topics are introduced.

The persons making the reports have regarded as only children, not only the ones who have never had brothers or sisters, but also those who have been left alone by death of others, and, in two instances, those who are only children for a number of years before the birth of others. The environmental conditions of these three classes are essentially the same, for the dead brothers and sisters seldom lived over five years, and, in nearly all the instances where they are mentioned, they lived less than one year. Furthermore, the surviving child is not the first born in more than half the number of instances, the other, or others, often dying before his birth. In a few cases it cannot be assumed that there would not have been other children had not the parents been divorced, or had not one or both of them died.

The average age of 134 girls is twelve and ten-thirteenths years, of eighty-six boys it is eleven and eight-ninths years, and for the 292 of both sexes it is twelve and two-tenths years. One is 2 years old, 5 are 3, 6 are 4, 4 are 5, 10 are 6, 15 are 7, 24 are 8, 22 are 9, 32 are 10, 19 are 11, 26 are 12, 17 are 13, 21 are 14, 8 are 15, 24 are 16, 15 are 17, 15 are 18, 7 are 19, 7 are

20, 2 are 21, 3 are 22, and 1 each 31 and 35. The youngest is two and the oldest is 35. 161 belong to the years from 8-14 inclusive. The fact that relatively so many more are given for these years is probably due to circumstances connected with the persons making the observations. Nearly all of the reports come from teachers, those preparing to teach, or from pupils in high schools. It seems but natural that they should have named more for these ages than for others. Yet it would be interesting, in the light of what may be presented later, to know whether the average age attained by only children as a class is equal to that attained by people generally.

Of 381 of both sexes, 215 are females and 166 are males. The greater number of females is probably explained by the fact that more females send in reports, but if the opinions of writers who have considered the subject are to be relied upon, we would expect to find a somewhat larger proportion of females than of males, as only children.

190, out of 240, are said to be Americans, 8 Germans, 5 English, 2 Jews, 2 Scotch, 2 Irish, 3 English-German, 3 Scotch-Irish, 1 Welsh-Irish, 1 Jewish-American, and 1 Welsh-American. There are 50 of non-American parentage, 17 of whom are the results of marriages between persons of different nationalities or races, a reference to which will be made in another connection.

The statements thus far made will suffice to give a general idea of the preparation and character of the data to be presented. Let us see whether its significance is in harmony with the general suggestions already outlined.

HEALTH.

Following are some condensed reports of cases that are typical examples, not only of the health, but of other conditions peculiar to such children. In condensing the original reports their expressions have been modified as little as possible, though quotation marks have not been used except in one or two instances. Besides the evidence which a knowledge of the preparation of the reports offers as to their trustworthiness, still other evidence of reliability is furnished by reading them through. Each report will be numbered for convenience of reference.

1. M., 16. Irish descent. Sanguine. Health fairly good, but must take care not to drink tea, coffee or other stimulants. Neither can he eat much vegetable food without feeling great discomfort. He is the first born, but had a brother who lived to be three and one-third years old. Began school at six and attended regularly. He gets along with some of his friends quite well but with others he disagrees. Spends much time in play, which is active at school but quiet at home. He is truthful and dislikes sham; also stubborn, and given to contradiction

of his elders. He is precocious. The right leg is paralyzed from the hip down. Both at home and at school he has been allowed too much of his own way. The mother was about 25, and the father 33, at the time of his birth. They had been married two years, and are still living. The mother has good health, the father only fair. Both have good habits and are conscientious in the discharge of duty. The father is a railroad station agent and the mother helps him in this work. He is of a bilious temperament, while she is sanguine. The mother has four sisters and two brothers, the father two brothers and two sisters. All seem to have good health.

2. M., 10. German-American parentage. "The father is a German of culture from a well known German university. The mother has one brother living and one, who was very delicate, dead. She is herself a chronic invalid and never, as a girl, took any interest in life. She is cultured and refined but lacks the will to do. Her only object now seems to be to properly rear her boy, who was an unwelcome addition to the family and for years was tolerated out of necessity. The mother-love seems to have asserted itself finally. The boy attended kindergarten at five, had a private tutor at six and entered the public school at seven. He speaks German and French as well as English, and also plays the piano well. Is a *real girl-boy*, sews, makes tiny doll dresses, cuts and fits them, sews on sleeves and puts on belts. He has whole sets of bed clothes, pillows and mattresses stuffed with cotton, and the pillow cases made on the machine. He is a sturdy, manly fellow, always taking his hat off as he enters the room, speaking in a soft voice, and taking part in conversation. He begged to be allowed to stay at home this week to help sew, because I was helping his mother with her sewing. He does not like school and seldom plays with boys. He says they are too rough and fight, and are not nearly so nice to play with as girls. He says boys tease him because he likes girls better, but that he does not care. He seldom quarrels with his playmates and is good and obedient generally. He is usually happy but sometimes becomes annoying by reason of the numerous questions he asks. He has rather definite and advanced notions of what he is to be when grown up. The mother seems to admire and honor her very intellectual German husband, and is a model wife, but she does not seem to have any love for any one save the boy. She was never happy with her own mother and feels she was never understood by her, hence she thinks it very important for her to avoid the mistakes from which she suffered. The mother was 26, and the father 45, at the time of his birth. The mother feels her duty very strongly and is in danger of overdoing the watching, and of making him too dependent on her own frail self. He is very different from other boys I have met."

3. F., 11. American. Nervous. Delicate, takes cold easily, and cannot stand much hardship. She is the only child born to her parents. She began school at seven and attends regularly except when ill. She does not get along well with other children, but succeeds fairly well in work. Not much time spent in play, which is always of a quiet sort. Her best traits are obedience and politeness; her worst is thinking herself better than other children. She is neither dull nor precocious, yet quite studious. The mother, especially, is very strict, but her teachers have usually been more considerate. The mother was 35, and the father 37, at her birth. They had been married five years, and are still living. The father has good health, but the mother has always been delicate, and since the birth of the child has been an invalid the greater part of the time. The father is superintendent of a railroad. The family occupies a good social position. Both parents are nervous. The father has one half-sister, the mother, two brothers and two sisters.

4. F., 12. American. Nervous. She has very poor health and is sick a great deal. She has three sisters and one brother who died before her birth. Only one of these lived to be five years old. She commenced school at seven, and but for bad health her attendance would be regular. She has little or no trouble with other children, and succeeds well in her work, as she is very studious. She plays little and in a quiet way. Her best traits are truthfulness, obedience, and affection; the worst is bashfulness. Precocity is very noticeable. The home treatment has been characterized by great indulgence. The father has always called her "Baby." At the birth of the child the ages of the father and mother were 36 and 34 respectively. They had been married 14 years. Their health is very good as are also their habits. The father is a dairyman. The mother, with hired help, keeps the house. They both have irritable temperaments. The mother has four sisters and two brothers; the father, five sisters and two brothers. Two of the mother's sisters have bad health, and the father's brothers and one of his sisters do not have good health.

5. F., 9. American. Nervous. Not robust, takes cold easily, and seems unable to resist disease. Has never had brothers or sisters. She began school at 7 but has not attended regularly on account of bad health. Her relations with other children are troublesome. Success in work is fair. She plays a great deal and has much company. The games are usually those demanding considerable activity. The best traits are truthfulness and affection; the worst are selfishness and passionate temper. She is very precocious. Has been greatly indulged at home, and is a favorite with the teacher. She ought to be required to "give up" to other children. At the birth of this child the father was 27 and the mother 28. They had been married two years. Both are still living, but the mother is never in good health. Their habits are good; the father is a partner in a general merchandise store. His temperament is sanguine, and that of the mother, nervous. The mother has one sister, and the father one brother. These have good health. The child is an only grandchild, and is subjected to the combined indulgence of grandparents, uncles, aunts, etc. One of the grandmothers lives with the child's parents, and always intercedes when any strictness is suggested.

6. F., 8. American. Nervous. Health is quite poor. She is subject to severe headaches, and in the winter time to bronchitis and croup. There have been no other children. She first went to school when 7, and has not attended at all regularly. The desire to have her own way has prevented her from getting along well with other children. In her work she succeeds fairly well. When alone she plays little and generally inclines to the imaginative games. She tries to impersonate different characters. She is sympathetic and affectionate, but also selfish and disrespectful. She is also precocious. Parents have humored her. Ought to be thrown with girls of her own age. The father was 33, and the mother 35, when she was born. They had been married 12 years. They are still living, but the father is subject to very severe attacks of rheumatism. The temperament of the mother is nervous, that of the father bilious. They live on a farm. The mother has two brothers and two sisters; the father one sister and seven brothers, all of whom have fairly good health.

7. F., 19. American. Nervous. General health is good, but she is subject to a kind of "fits." There have been no other children. School attendance is regular and began at 9. Her success in work was good. She got along with other children well, and in play her favorite pastime was to seat herself on a box and imagine herself a queen. At home she could usually be found sewing for her dolls or playing

with them. Her best trait was her good temper; her worst, lying and stealing. Precocity was marked in action and words. There was a slight turn in the left eye which was very noticeable at times. At home she had her own way and was consequently frequently in need of restraint at school. The mother's age at her birth was 20. She had been married over a year. The father is dead—died of heart disease. He had one brother, while the mother had two sisters. They seem to have good health.

8. M., 15. American. Phlegmatic. Seems to have good health, yet the sight of blood always causes him to faint. There were never any other children in the family. He commenced going to school at 9, and attended regularly, though he does not now attend. He has little trouble with other children. He seems to be affected mentally and does not progress very well in school work. He is exceptionally dull. He spends considerable time in play, and at home the play most often is imitative of the various trades. The treatment, both at home and at school, seems to have been considerate. His father was 24, and his mother 21, at the time of his birth. They had been married about one year. They are both still living but are separated. The father is delicate, and a drunkard besides. Neither parent has had brothers or sisters.

The above are typical of almost 100 reports. In a general way the health, as indicated in the reports, is most conveniently described by use of the 3 expressions, "good," "fairly good," and "bad." 162 belong to the first class, 98 to the second, and 96 to the last. That is, 96 have bad health, and 98 others do not have good health. The disorders of health most often mentioned are: lung trouble in ten instances, heart trouble in 5, St. Vitus Dance in 5, exaggerated cases of nervousness in 10, "very delicate" in 30, and paralysis in 1, while chronic susceptibility of an unusual kind to headaches, throat troubles, nose bleed, colds, indigestion, catarrh, eye troubles, convulsions, etc., is very frequently mentioned.

Still other evidences of impaired health are added under the head of "physical defects." Ten are deformed. Some of the deformities are: club-foot, weak legs, hunch back, spinal curvature, cross eyes, etc. Fifteen have very weak eyes, 4 are deaf in one or both ears, 3 blind in one eye, 5 have grave disorders of vocal organs, 8 are birthmarked, one is hydrocephalus, and one a paralytic. Others are "hair-lipped," "flat-footed," "pigeon-toed," have one side undeveloped, etc. A total of 48 have physical defects of one kind or another.

A great variety of terms were used in describing the temperaments, but it is sufficient to say that it is described as "nervous" in 133 out of 258 cases, or something over half of the number for whom the temperament is indicated. No other expression descriptive of temperament was used more than 42 times.

In 80 of 249 families, for which the information is available, there have been at least 120 other children. The largest number of any one case being 5, all of whom were still-born. In

42 of these 80 families the surviving child was not the first-born. Of the entire 120, 9 were still-born, 20 lived only a few hours or days, 46 others less than a year, 6 not more than a year, 3 not more than 2 years, 3 less than four years, 2 less than 5 years, 2 less than 6 years, 6 less than 7 years, 2 less than 9, and one each, 10, 12, and 15 years. It could hardly be claimed that so large a proportion of the children of families in general die at corresponding ages, and that the early deaths of so many of these children do not signify degenerative tendencies of a very pronounced sort. Besides it must be remembered that the 120 deaths represent only those that were *known* to the individuals making the reports. That there were others cannot be doubted. Yet with this number the proportion of all the children born to the 249 families, who died at the above mentioned ages, is 31%, or about 320 per thousand for the years 1-9 inclusive. Nevertheless, in the absence of suitable statistical data for comparative purposes, it cannot be positively asserted that the rate is greater than the normal. ✓

Thirty-two of the 242 fathers are dead, as are also 23 of the 248 mothers. The father's health is said to be bad in 58 of 245 reports, and that of the mother so in 100 out of 239. It appears, therefore, that in so far as bad health in either parent is a factor in the limitation of the birth-rate, the mother is of far greater importance than the father. Gross¹ presents statistics showing that women are sterile about eight times as frequently as men.

Thirty-one parents from among those of 249 families had consumption, dying of it in most of the cases. 22 were so weak and delicate that they were called invalids, 18 suffer from nervous prostration, 8 had heart trouble, 5 were insane, while there are many reports of grave female disorders and not a few of paralysis, rheumatism, and cancer. Still there are many other disorders of a serious character, mentioned at least one time each. The frequency with which consumption and cancer are noted seems to harmonize with the observations of many writers on the subject of fecundity, that cancer and tubercular diseases are especially conducive to sterility.

The temperament of parents is described as "nervous" in 134 instances out of 249. 43 is the greatest number described by any other single expression. There are 37 cases, out of a possible 226, in which one of the parents was an only child. 7 of these are among 108 fathers of girls, and 9 among 76 fathers of boys, while 13 belong to 120 mothers of girls and 5 to 76 mothers of boys. The only-child parents of girls are more often mothers than fathers, while the opposite is true for

¹ Duncan: Sterility in Women, p. 3.

those of boys. There are 17 only-child fathers and 20 only-child mothers. Whether this is a larger number than is to be found among parents generally cannot be determined, because there are no satisfactory data on which to base a comparison, but it seems that it must be considerably greater, especially if it be true, as Ansell found, that only one child out of every 78 is an only child.

The average number of brothers and sisters which both the 209 fathers and 226 mothers had is three and one-fifth. Adding one to this, we have four and one-fifth as the average number of children for these families, or nearly two less than the average which Ansell found for 1,767 families. The average number of brothers and sisters of 108 fathers of girls, is three and two-fifths, and of 120 mothers of girls, is three and one-sixth, while that of 76 fathers of boys is two and six-sevenths, and of 81 mothers of boys is three and one-third. Thus the mothers of girls come from smaller families than do the fathers, and, on the other hand, the fathers of boys come from smaller families than do the mothers.

The health record of the brothers and sisters of the parents, though not indicated in a very considerable number of the reports, shows 30 consumptives, 5 insane, 4 cancerous, many cases of heart trouble, invalids, nervous and mental wrecks, and numerous early deaths, in not a few instances nearly the entire family of children dying in infancy. Here, also, though suitable data for a comparative estimate is wanting, it is difficult to avoid the inference that the health is inferior to that of people generally.

The average age of fathers at the time of birth of 149 girls is thirty-two and two-fifths years; of mothers of 157 girls it is twenty-six and one-fifth, the two showing an average disparity of about six years. The average age of fathers at time of birth of 86 boys is twenty-eight; of mothers of the same number of boys it is twenty-four and two-thirds, the average difference here being three and one-third years. The average age of fathers at the time of birth of 235 of both sexes is 30.5 years, and that of mothers of 243 of both sexes 25.5 years, the average disparity being 5 years. It is perhaps rather significant that the mean age of parents at time of birth of the boys—twenty-eight for fathers and twenty-four and two-thirds for mothers—is very noticeably lower than that of parents at time of birth of the girls, which is thirty-two and two-fifths for fathers and twenty-six and one-fifth for mothers. Does it not mean that the children born in the later stages of relative sterility are more likely to be girls than are those born in its earlier stages?

In 218 marriages the mean length of time that had elapsed

between marriage of parents and birth of the first child is approximately 3 and five-tenths years. For 29 of these, the time between marriage and birth was 1 year, for 54 it was 2 years, for 39 it was 3, for 14 it was 4, for 17 it was 5, for 5 it was 6, for 10 it was 7, for 2 it was 8, for 3 it was 9, for 5 it was 10, for 2 it was 11, for 6 it was 12, for 1 it was 13, and for 2 it was 14.¹ Ansell found in 6,035 marriages that the first birth was within 1 year after marriage, in 3,159 cases, within 2 years in 2,163, 3 years in 421, 4 in 137, 5 in 69, 6 in 26, 7 in 21, 8 in 11, 9 in 7, 11 in 5, 12 in 4, 13 in 13, and 14 in 2. Let these numbers be compared with those above given for the 218 marriages, and the extent of the variation from the normal time that elapses between marriage and birth is made apparent. For 106 or nearly half of the 218, this time is 3 years or more, while at the corresponding time for Ansell's 6,035 marriages, only about one-twenty-first part had not resulted in children. That is only 1 in 21 of the 6,035 couples had their first child after 3 years, only 1 in 39 after 4 years, etc. Duncan, commenting on the table, says that parents who have been married 16 months and are still childless, are exhibiting signs of relative sterility, and also that after the fourth year has been entered upon without children, there is a presumption of persistent sterility. With this in mind, it is well to remember that the average length of time after marriage at which 190 first children were born is over 3 years.

There are a number of very early marriages, one with the mother at 11, and several as early as 15, being reported. Likewise there are quite a number of marriages coming near the end of the reproductive period of one or both parents. If it be true, as is claimed, that the age in women best suited for reproduction is somewhere between 24 and 35, and in men between 30 and 40, it is but natural to infer that children born to parents of other ages will have poorer health as a rule, an inference which ought certainly to be employed in accounting for the bad health of some of the children under consideration. It seems that the strain of too early child-bearing often exhausts the girl-mother's stock of vitality without producing a healthy child and results in early loss of fecundity. Although child-bearing near the end of the reproductive period may not be so dangerous to the mother's health it seems to be quite as unfortunate for the child. Thus 12 of the 32 youngest children, their average age being 11, have bad health. Two of them have convulsions, 4 are weak and delicate, 2 have lung trouble, and another has kidney and eye trouble.² Mitchell found

¹ Duncan: Sterility in Women, p. 19.

² Duncan: Sterility in Women, p. 62.

among 433 idiots that 138 were first born, and 89 last born.¹ Duncan is inclined to think that the only child, especially if born near the end of the period of fecundity, is more likely to be a girl, and when so, represents the last effort of the stock to perpetuate itself. The greater average age of parents of girls, already stated, seems to accord with his view. In the same connection he refers to Galton's observation of 100 English heiresses, one-fifth of whom had no male children at all, a third but one child, and three-fifths not over 2 children.

The habits of the parents are said to be bad in 40 instances. There are 20 drunkards, and many drinkers, several of whom are mothers. 5 fathers are excessive smokers. The work of 5 mothers seems to be unfavorable to child-bearing, and 5 others are immoral. Over-fondness for society and late hours are mentioned 8 times, as are also divorces. The occupations are named in 143 of 241 families, as in-door, and in the main are sedentary. For the remaining 98 families they are out-door. People of the middle class predominate.

IN RELATION TO SCHOOL.

The following condensed reports give a very good idea of the school life.

9. F., 10. American. Nervous. Has good health, but the parents thought her sickly and were continually giving her medicine. She is the last born of four children, 3 of whom died in infancy. Her school attendance commenced at four but was very irregular till she was ten. If she disliked the school she was allowed to stay at home for awhile and then try another. She gets along very well with other children and also in school work. Not much time is spent in play, as most of it is taken up by music. When alone her favorite amusement is with her dolls. Unselfishness and affection are the best traits, while self will and a bad temper are the worst ones. Precocity is pronounced, and she is always ready with an answer. She has been allowed to do about as she pleased at home and has also been favored at school. The father was 27, and the mother 25, at her birth. They had been married 4 years. The father, who was a consumptive at the time of his marriage, died when she was small. He had 2 sisters and the mother 1. They have good health.

10. M., 14. American. Very nervous. Not healthy. Had asthma till 12, but is better now. He is the second born of 3 children, 1 of whom was dead at birth. The other lived three years. Commenced going to school at 7, but has not attended regularly. He does not do well in his work nor get along well with his playmates. Much time is spent in plays, which are usually those that boys most often enjoy. He is generous, and at the same time deceitful. The treatment has been rather severe. The father was 35, and the mother 32, at the time of his birth. They had been married 3 years. Both are still living. The mother does not have good health, and is club-footed. The father has good health, but is near-sighted. He is an excessive smoker. The mother's character is not good. She has 2 sisters, and he has several half brother and sisters. These all seem to be in good health.

¹ Ibid: pp. 66, 67, 68, 69.

11. M., 23. American. Equable. Has very good health now, but when about 15 was afflicted with St. Vitus Dance. Has had no brothers or sisters. He attends school regularly, having entered at 7. He did excellent school work, but is indifferent toward other children. Instead of playing he would sit in the Navy Yard and examine machinery. Seems to have no bad traits. Has been indulged both at home and at school. He has been kept too much under the influence of his mother and is very effeminate. At the time of his birth the father was 27 and the mother 20. They had good health, but the father, who is a drummer, is intemperate. The mother had two brothers and two sisters, the father two sisters. These have good health.

12. M., 7½. American. Irritable. Is not a very healthy child, but this is probably due to his not being allowed to play out in the open air as much as other children. He is the only child his parents have had. Until this fall he was taught at home by his mother, but now attends the graded school. His attendance is regular. The other children delight in teasing him and it is with the girls he gets along best. He is very slow in his school work. His favorite games are those that can be carried on in doors, for which the *real* boys have called him "the girl boy." He is not talkative, but is sly and willing to blame others for his misdoings. Is also selfish and wants his own way in playing. He is not very bright, and one cannot help noticing the dreamy expression of his face. His home treatment has made a baby of him, while the impartiality of school life does not please him. The trouble rests with his parents. The father was 43, and the mother 41, when he was born. The former has one brother and one sister, the latter 3 brothers and one sister. These seem to be in good health. The father is deaf.

13. M., 10. American. Nervous. Has a bad throat and is quite delicate. He is large for his age. He began going to school shortly before 6, and attends regularly when his health permits. If the other children do not yield him his own way he will not play. He is quite bright in his studies but has to be encouraged very often. Active plays, and those in which he can win, suit him best. He has many moods. Sometimes he is pleasant, but more often very disagreeable. He is deceitful and has a bad temper. He is quite precocious. The vocal organs are defective and he stammers in his speech so that it is difficult to understand him. It would be well if he had more playmates and were compelled to share with them. The ages of his parents at the time of his birth were 37 and 39. They had been married 12 years. They are in good health. The mother had 1 sister and 6 brothers.

Sixteen of 272 who are of school age, do not attend school, while 74 of those who do attend are very irregular. Many are allowed to remain at home whenever they choose, others are kept at home whenever the weather is in the least threatening, and still others are allowed to attend, now this school, and now that, as fancy may suggest. Quite a number have tutors at home, and a still larger number go to private schools. Very often they do not begin going to school until several years after the usual age for beginning. 2 began at 3 years of age, 7 at 4, 36 at 5, 78 at 6, 81 at 7, 24 at 8, 8 at 9, 4 at 10, 2 at 11, and 1 each at 13 and 14. The average age of entering school for the first time is 7½ years. Bearing in mind that kindergarten attendance has been called school

attendance also, it is apparent that these children enter school a year and a half or two years later than is usual with children generally. This is doubtless due in part to their poorer health, but in the main, to the unwillingness of parents to part with their company so early. Perhaps, also, the children are not so anxious to begin as those having older brothers and sisters, but it would seem that the only child would be more anxious than others to start to school, because of the promise of increased companionship. This state of things probably arises in part from their greater timidity in making the transition from home to school life. Another phase of this is taken up in the consideration of their social life.

PLAY AND SOCIAL LIFE.

The reports given under the preceding topic are more or less typical here. The following ones, however, illustrate in a more specific way the character of the means employed to realize the social longings.

14. F., 8. American. "Self reliant, but especially sensitive to rebuke. Well developed physically, and without any defect except weak eyes. She had been accustomed to playing alone or with older persons. One morning, about two months after she had entered the kindergarten, the children were taking their seats as usual at the conclusion of the preliminary exercises. M— had taken pains to reserve a chair by her side. On noticing the vacant chair, I told J— to sit by M—. Several of the children said, 'But M— will not let any one sit there. She says it is for her friend.' After a moment's thought I recalled that she had greeted me that morning with, 'Miss —, I have a little friend with me!' Seeing no child, I had supposed the mother, who very often spent half the morning in the kindergarten, would bring the little friend later. I also remembered that she had a vacant chair by her during the story in the circle. I called her to me and asked her to tell me what she meant. She said I had told them they might bring their little friends to school and that she had brought hers. I told her I did not see him and asked where he was. He was in the dressing room, she replied. We went out to bring him in. On the way out she talked all the time, explaining that it was a little boy friend with whom she played at home. On reaching the dressing room she ran to the other end of the room, pretended to take hold of a child's hand, who was a little younger than herself, and led him to me. I pretended to shake hands and asked his name. It was J—. We took off his wraps. We then led him into the school room, M— holding one hand and I the other. She pulled out the reserved chair and seated the imaginary J—. M—'s manner was very matter-of-fact. While she was seating her little friend I told the others that M— had brought a little play child, a little make-believe boy, to spend the day with us, that he was not even a doll dressed as a little boy, and that we should try to see what a happy time we could make them have. Some of the faces expressed disapproval, others of them looked at her as if there were something uncanny about her, while others started to make fun of her. They were easily checked, and so the imaginary J— spent the day. He was given the same material to work with, M— doing his work as well as her own. He played the games with



us, M— insisting that the children take his hands in the game. She pretended to show him how to hop like the birds, etc. She shared her lunch with him and, when ready to go home, put his wraps on. Before she started I called her in, telling her at the same time, to leave J— in the dressing room. Taking her on my lap I asked her if they had had a happy day. She replied, with a bright face, that they had. After telling her I was glad they had, I said, 'but, M—, J— is not a *real* boy, is he?' 'No,' she replied, 'but I play with him at home.' I then tried to persuade her that she had to do so much for him that she could not give any time to her *real* friends, who were sorry, and asked her if it would not be better to leave J— at home. She replied, 'Yes.' Her parents, soon afterwards, told me that she had several imaginary friends, but two special ones, a little girl and the little boy, J—. She spent so much time with them that they were uneasy and had sent her to the kindergarten with the hope of having her forget them. They said she usually announced the fact when she wished to take them out with her, but that on the occasion above alluded to she had failed to do so. Her happiest hours were spent in this way. She continued to play with these imaginary companions at home, but never again, in the four years that I had her, did she refer to J—. She was always ready to 'make up' a story about the house she had built, etc, etc. She was especially good at illustrating stories that had been told her, on the blackboard.

"She has a good healthy disposition in most respects, but is mean and little about some things. She will share her lunch with others very grudgingly, and hold on to old things long after they are of no value. Her grandmother gave her, on her sixth birthday, a 'companion,' containing pencils, paper, etc. She had been using an old and worthless one which I had supposed she would throw into the trash basket, but she gave it to A—. Soon after I heard her tell A— that she would have to return it, as she had only pretended to give it to her. I tried, by means of persuasion and explanation, to have M— understand that it was now no longer hers, but observed at the close of the day that she took the companion home with her. She said it was one she had had for a long time and that she could not part with it. (Such conduct was often excused by means of sentiment.) Another time a penny belonging to one of the children was left on the table. Some of the children saw M— take it. She denied having done so, but a prolonged conversation with her caused her to find the penny. She said she thought it was hers. I never regarded her as untruthful or untrustworthy. She was certainly fussy and over particular."

15. M., 7. American. Nervous. Has bronchial trouble. Has never had brothers or sisters. He entered school at 5, and has attended regularly. He is backward with other children, but succeeds fairly well in work. He spends much time in play and, at school, plays much the same games as other children. He is selfish, yet obedient. He is also precocious. The home treatment has been good. The mother was 20, and the father 22, at his birth. They had been married a year. Both have good health. The father has three sisters and one brother, the mother six sisters.

16. F., 19. American. Sympathetic temperament. Health usually very good. I had an older sister who lived a little more than two years. Entered school when about 8, and have attended regularly. I never got along very well with a *number* of girls, but generally wanted just one friend to be with most of the time, and even yet I would rather go with just the one. Liked to go to school, and succeeded very well, but found it hard to settle down to work. Never cared for such play-

things as other children had. The games at home were usually quiet, such as matching cards, jacks, etc. I was patient but lacked self-reliance, for others had usually done for me what I did not care to undertake for myself. I was humored by my mother, with whom I spent a great deal of my time. At my birth she was 25 and my father 24. They had been married 4 years. My father is a farmer, and does not have good health. He has no brothers or sisters, but my mother has four brothers, who enjoy good health.

17. F., 11. American-Jew. Nervous. Has had no brothers or sisters. Health good. She attends a boarding school and is regular in her attendance, which was begun at 7. She does not get along well with other children, and often will not play unless she can have her own way. She plays a great deal. At home she places books on chairs as pupils and, with another book in her hand, she addresses the chairs as her pupils. She also likes to play theater, pretending that she is a ballet girl. Her home surroundings lead to this. She is kind and sympathetic, but also contrary, vain, and precocious. The loss of sight in one eye above mentioned, and a broken arm, were caused at birth. She has been surrounded generally by adults who have petted and spoiled her. The parents were each about 25 at her birth, and had been married about 2 years. They have good health. Both are excitable and nervous. The mother keeps a boarding house. Her father is an accountant.

18. M., 18. American. Irritable. Has good health. He entered school at 7 and attends regularly. With other children he is always striving for the mastery, and consequently does not get along with them very well. In work he is slow. He spends much time in play. He enjoys playing with pets. He tells many improbable stories. One of these was about a lion and a tiger fighting in his back yard. He saw them from his window, put on his hat, and went out and killed the lion, which was about to conquer. He is affectionate, but very selfish also. Has too much home indulgence. The father's age at his birth was 38, that of the mother 30. They had been married 3 years. The father has good health, the mother is excitable. Three sisters of the father died in infancy and only one of his two brothers is now living. The mother had three brothers and two sisters. This boy has an only child-cousin.

134, out of a total of 269, get along badly with others, 54 only fairly well, while only 81 seem to be normal in their social relations. When they disagree with other children it is usually because of a desire to rule. If they fail in this desire they are likely to refuse to associate with the children who cause the failure, and in a measure succeed in the wish to have their way, either by choosing younger companions whom they can control, or older ones who are willing to grant indulgence. Many do not care for a large number of companions, and select one or two for friends with whom they prefer to spend most of their time. They do not, in numerous instances, enjoy crowds, and keep aloof from games, very often remaining in doors to talk with the teacher. A marked preference for company of older people is manifest, even when every opportunity for younger company is present. But this is no doubt due less to a dislike of suitable companionship than to their inability to understand, and be understood by, children of near their own

ages. It is plainly evident that they have as deep longings for society as the children of other families, but their isolated home life has failed to give them equal skill and ability in social matters. They do not so well understand how to make approaches, to concede this thing and that, and are not likely to so readily fall into companionable relationship with those who are unaccustomed to yield less than half to others. The greater intimacy with parents unmistakably predisposes to premature development of the social instinct.

They are very often imposed upon, notwithstanding the willingness which so large a number of them display to practice impositions on others, but they are less proficient in such contention. To be sure there are many who appear perfectly normal in these respects, but they have played more with children, of their own ages, have had sensible treatment at home, and enjoy more vigorous health. Quite a number seem to begin to overcome these limitations during the age of puberty.

That they are not less anxious for companionship than other children, is shown by an examination of the nature of the home amusements, especially those which involve imaginary companions, of which there are about 50 well defined cases mentioned.¹

Miss Vostrovsky found in the study of a number of such cases as these, that a dislike of solitude and a longing for more appreciative and sympathetic relations with others, were the chief factors in their development. The ones reported in the present study certainly harmonize with that notion of their origin. Thus two little girls take their imaginary brothers to school, hang the wraps in the cloak room, reserve chairs for them at the table, and divide the "goodies" at lunch time. Again, one plays on an imaginary instrument, another calls on imaginary friends, another has imaginary friends call on her, carrying on long conversations with them in which she does all the talking. Others have imaginary tea parties, schools, church, millinery stores, etc. Still others assume different characters, as mother, teacher, Queen Victoria, etc. The imagination is often helped out by dressing up in suggestive costumes. Likewise the doll seems to have an unusually prominent place, while the household pets are drawn into service to supply the place of *real* children, some having imaginary animals to help out in the scheme.

The evidence contained in many of the reports warrants the assumption that, as a class, only children have greater power of imagery, and that stories can be pictured out by them with more of ease and accuracy than by other children. (Case 74 is a good illustration of this.) The inference just made, how-

¹ A Study of Imaginary Companions: C. Vostrovsky, Education, XV, p. 383.

ever, does not harmonize with that of Professor Baldwin,¹ who says: "And while he" (the only child) "becomes proficient in some lines of instruction, he fails in imagination, in brilliancy of fancy." It does coincide with the views expressed by Sully,² who states that his studies for students lead him to a conclusion directly opposite to that arrived at by Baldwin.

Out of 244, there are 138 who spend the usual amount of time in play at school, 44 who give less time to it, and 62 who play little or none. Many of the 62 stand around and watch others play, showing little inclination to join in active games. They prefer the quieter forms of amusement, and often like to be alone. If left to their own choice they are pretty sure to be found in the school room with their teachers at intermissions. A number of the boys prefer to play with the girls, at strictly girls' games, such as keeping house with dolls, and generally come to be called "girl-boys." As a rule they amuse themselves in a quieter way and appear to take less pleasure in noisy games of any sort. Very often it is mentioned that they give a considerable amount of time to reading, and that they are disposed to resent the intrusion of others upon their more quiet and pretty well fixed forms of behavior. Those who join in active games at school fall back into quieter ways at home.

MENTAL AND MORAL PECULIARITIES.

The best traits, in the order of frequency mentioned, are: affection, honesty, obedience and generosity. The worst traits in similar order are: selfishness, "spoiled," temper, jealousy, untruthfulness, stubbornness, and haughtiness. The most prominent characteristics, regardless of their worth, are: precocity, named in 134 instances among 238 children, selfishness in 94, imaginativeness in 48, affection in 40, jealousy in 25, mental defects in 23, temper in 23, self-will in 20, and vanity in 20.

As has already been stated, the only boy, only girl, and youngest child offer many points of resemblance to the only child, especially in the traits that are of post-natal origin. The same tendency to unwarranted indulgence and concession on the part of parents is manifested and with similar results. Also the youngest appears to resemble the only child in that the influences which antedate birth, operate to an unusual degree in giving a constitution less healthy and robust than that of the average child. Kolrausche,³ in a study of "Jugendspiele und Einzelsöhne" in "Kaiser Wilhelm gymnasium" at Hanover,

¹ Mental Development, p. 358.

² Studies in Childhood, p. 39.

³ E. Kolrausche. Zeitschrift Für Schule Gesundheitspflege, Vol. IV, p. 178.

says that the only sons enter into movement plays less regularly, if at all, than do the other boys. These plays, especially foot ball, among pupils from Unter Tertia to Prima, have been under the observation of teachers for years. Of the 70 with brothers, 47% entered into the games regularly, 16% irregularly, and 37% exceptionally, or not at all. Of the 68 only sons, 13% took part regularly, 12% irregularly, and 75% not at all. These latter showed a greater number of bad athletes. He concludes, therefore, that the home relations for only sons are not good, and that the "Jugendspiele" should be made compulsory.

The answers to inquiries about subjects of study yield little, if any, suggestion. 117 are poorest in arithmetic, and 78 are best in the same subject. No other subject is mentioned more than 41 times. Whether this is unusual or not, cannot be said.

PRECOCITY.

The observation of precocity in such children is so frequent as to warrant special consideration. The following reports are more or less typical.

19. M., 16. American. Nervous. He is naturally delicate and is kept up only by the most constant attention. He has never had brothers or sisters. He entered school at six and has been regular in his attendance. In his earlier school days he did not get along well with the other children, especially with the boys, who did not like to play with him, because, as they said, he had to tell his mother everything. In school work he succeeded especially well. He would join in most of the games at school, but usually withdrew when any roughness made its appearance. This may have been due to his physical condition, as he has poor eyes and spinal curvature. The home treatment was of a nature to develop a marked religious tendency. This has grown so that his mother goes to him as she would to an older person to discuss religious topics in which she is interested, and she finds that he talks remarkably well about such things. His teachers always treated him with a great deal of respect. He never gave them cause to treat him otherwise, for both his conduct and work were far above the average. The father was 30, and the mother 25, at his birth. They had been married 4 years. Both have delicate health. The father has two sisters and two brothers. These latter do not have good health.

20. F., 9. American. Nervous. Is troubled with heart disease. Has never had brothers or sisters. She entered school when 7 and has attended regularly, succeeding very well in the work. She is precocious. Her ways are those of older people, and she is in a class of pupils at school who are from two to five years older than she. Her parents are quite strict with her and treat her as if she were grown. The father was 31, and the mother 32, at her birth. They had been married three years. Their habits are good. The father is a lime agent. The mother was a teacher. She has no brothers or sisters. The father had two brothers and two sisters.

21. F., 11. American. Nervous. She is thought to be quite delicate and great care is taken of her, she is kept in a warm room and seldom allowed to go out. She is often sick and under the doctor's care. She has never had brothers or sisters. She has a governess and has never attended school. She has few companions of her own age,

and associates mainly with grown up people. She talks and acts in a grown-up manner. When she plays with other children she gets along with them reasonably well, but she does not care to run or take part in active sports. She likes her lessons and is quick to learn. She is affectionate and obedient, and does everything she can to please her parents. Her parents give her a great deal of attention and gratify her every wish. They are always planning something for her and do not like to have her away from them. It is my impression that she should associate more with persons of her own age. Her parents were about 30 years of age at the time of her birth. The father is a lawyer, and the family occupies a good social position.

22. M., 22. American. Nervous. Has never been robust. He entered school at 8, but did not attend regularly for several years, because his mother was always unduly anxious about him whenever he was out of her sight. As he became older and, as she thought, better able to take care of himself, his attendance grew to be quite regular. He enjoyed the society of other boys, but his mother determined the amount of time he should devote to play, and as a result he played less than he desired. Fortunately for him he was fonder of reading than of anything else, and when other boys were out on the street he was with his books. He made remarkable progress in his studies, and even his games were those that had some connection with literature, history, etc. His best trait is his fondness for his mother. During the last two years, while away from home, he has written her an average of three letters a week. He has no bad traits. He was always coddled at home, and as his early school work was with an aunt for a teacher, it is safe to say he was petted in school. To me it has always appeared that he should have had more of the free, outdoor life of other boys, yet he has turned out to be a good boy and others have not. The father was 25, and the mother 23, at his birth. They had been married a year. The father died when the boy was 9 years old. The mother is exceedingly nervous. She had one brother. The father had four sisters and two brothers. The boy's submission to maternal whims has made him the subject of many jokes, but he does not mind them.

Little comment on these cases is needed, especially as the subject will be taken up again under the head of Pedagogical Suggestions. It may be stated, however, that, whether or not there seems to be a predisposing physical basis for precocity, there is abundant evidence of the very great influence of environment in producing it.

TREATMENT.

Excessive indulgence is practiced at home in 191 of 266 instances. In 50 instances the treatment is said to be sensible, in 18 stern, and in 7 bad generally. "Never allowed to do anything because thought so much of," "had his own way in everything," "humored," "petted," "spoiled," "indulged," "coddled," etc., are some of the expressions frequently employed to describe the parental treatment.

SUMMARY OF POINTS.

These only children are unmistakably below the average in health and vitality.

Mental and physical defects of a grave character are much more common among them than among children generally.

The average length of time between marriages of the parents and births of the children is so great as to suggest a pronounced degree of relative sterility in the stock. This is much more strongly shown in the mothers than in the fathers.

The average age of the parents at the birth of girls is considerably greater than it is at birth of boys.

A greater proportion of the girls than of the boys have only-child mothers, while on the other hand a greater proportion of the boys than of the girls have only-child fathers.

Nervous disorders seem to be unusually common in the families.

These children appear to enter school later than other children, and to be less regular in their attendance.

Their success in school work is below the average.

Not so large a proportion, as of other children, enter the public school.

They do not join in games so readily or often as do other children of corresponding ages. They prefer quieter forms of amusement.

Many of them have imaginary companions.

Very many manifest a decided preference for older associates, while not a few select younger companions, and often from the other sex.

A large number of them do not have as good command of themselves socially as does the average child. Their social relations are therefore more frequently characterized by friction.

Peculiarities in these children seem to be more pronounced than in others.

Precocity appears to be the most prominent trait.

Selfishness is the most frequently named of the worst traits, while affection is most often named among the best traits.

As a rule the home treatment had been that of unthinking indulgence, which generally develops in a child the habit of expecting concessions on all sides, and corresponding unwillingness on his own part to make them to others. A right appreciation of the conditions with which the child must be concerned outside the family life, requires that he be given ample opportunity for companionship with children of corresponding ages.

PEDAGOGICAL SUGGESTIONS.

Very often they have been forced into an early adulthood from having been made the constant companions of older persons, especially the mothers, who very frequently make them the sharers of their trials and responsibilities. Thus it happens

that the spectacle of a mere child, bowed down by the weight of big problems, is presented, and at a time in his life when it would be most natural to expect him to be deeply interested in a foot-race or a knife-trade. Not a few parents have laid the burden of their troubles on defenceless children, making them father-confessors and both spiritual and temporal advisers. It is little wonder, then, that such children are unable to understand and appreciate children of their own ages. It may be gratifying to some parents to have a child of theirs, while yet in knee breeches or short dresses, spoken of as a "deep thinker," a "perfect gentleman," "a perfect lady," etc., but it is pleasure of a cheap sort and paid for at the price of stunted and abnormal growth.

Their more affectionate dispositions, together with a strong preference for associations with their elders, no doubt has much to do in securing a greater degree of indulgence from teachers. Yet their frequent inability to unite readily with other children in sports, and to adjust themselves to the more stringent requirements of school life generally, leads to not a little trouble, and occasionally results in expulsion or voluntary withdrawal for the purpose of entering another school with the hope that more agreeable surroundings may be found.

The peculiarity of their ways often subjects them to unusual and unpleasant attention from other children. Neither understands the other, but the misunderstanding results more seriously for the only child. Frequently their more effeminate ways cause them, in the language of some of the persons reporting, to be "made fun of," "called a girl boy," "used as a foot-ball," etc. Still the larger number gradually adjust themselves to the more complex relations of school life, which leaves us to conclude that the cause of their backward social development is to be found chiefly in their home surroundings, though suggestions of a physical predisposition are not wanting. The healthy and robust have a greater capacity for social development and will do more to realize it.

The persons making the reports almost unanimously agree in holding that there should be far less indulgence, that a more uniformly firm and natural method of control should be followed, that age considerations should have more influence; that such children should not be so constantly with parents and other elderly persons, but more with children of their own ages and thus learn how to share with, and yield somewhat to, others; that the undue anxiety and concentrated love of parents should yield to a more intelligent appreciation of the wants of the child, who is in much greater need of discriminating attention than of the lavish bestowal of misguided affection.

The constant interference and watchfulness of over anxious

parents denies to the child the range and freedom of action and experience which his nature calls for at the time, and which he must have if he is to develop self-control and self-direction. The basal and fundamental instincts of his nature, physically, mentally, and morally, are ignored only with evil results. He must be given some opportunity to choose for himself, to experiment.

Says one writer :¹ "It will be noticed that all creatures which have large families, whether beasts or birds, have less trouble in rearing them than those which have only one or two young. Little pigs are weeks ahead of young calves, and the young partridge, with its dozen brothers and sisters, is far more teachable than the young eagle." Another claims that the young Newfoundland dogs that grow up with children for playmates are far more intelligent and teachable than those put into the hands of trainers from the start, and there are none who have not observed what wonderful teachers of one another children are.

¹ Animal Kindergartens: Spectator, Nov. 7, 1896, p. 642.

SOME PRACTICAL ASPECTS OF INTEREST.

By JOSEPH S. TAYLOR, PD. D.,

Principal Public School No. 19, New York City.

The first systematic attempt to study children's interests seems to have been made by Alfred Binet in 1890. His method was to question one child at a time as to certain common objects, such as knife, bread, doll, etc. From the data thus gathered he drew these conclusions:

1. That children are impressed to a very small extent by the visible aspect of things.
2. That their greatest interest is in the *use* of things.
3. That their ideas possess only slight abstract characteristics.

Prof. Barnes, acting upon the hint thus furnished by Binet, made a similar experiment in 1892. The children were asked to tell on paper, without knowing what use was to be made of their answers, what the following are: knife, bread, doll, water, arm-chair, hat, garden, mamma, potatoes, bottle, flower, snail, mouth, lamp, earth-worm, shoes, finger, clock, house, wolf, omnibus, piece of sugar, thread, horse, table, bird, dog, carriage, pencil, balloon, village, box, handkerchief.¹

This is the same list of words that Binet had employed. Barnes tested over two thousand children, and reached the following conclusions:

1. That at the age of seven, "use" is the thing of transcendent importance in the thoughts of children.
2. At the age of eleven "use" is still supreme, but "larger term" and "substance" are assuming importance. By "larger term" is meant referring an object to its genus; as, "a clock is a time-piece." By substance is meant what an object is made of; as, "a clock is made of wood."
3. At fifteen "larger term" is more important than "use;" "substance" and "structure" are getting more and more prominent.

At this point Dr. Shaw, Dean of the New York School of Pedagogy, took up the study, repeating what Barnes and Binet had done, but adding several new features.²

He had a larger number of objects, and classified his answers

¹ Studies in Education, p. 203. Stanford University.

² Child Study Monthly, August, 1896.

under a larger number of heads. As a result of these variations, and also by reason of a different classification, by which answers appear under "action" that were classified under "use" by Barnes, Dr. Shaw is inclined to revise some of the opinions expressed by his two predecessors.

Another valuable investigation of interest from the practical side is that of Mary Sheldon Barnes on "The Development of the Historical Sense in Children."¹ One of her tests was to read a story without a date, a place, a name, or a moral, for the purpose of finding out what questions children would spontaneously ask. The other test consisted of two parts: 1. Children were asked to write down something that happened before they were born, and tell how they knew it was true 2. They were asked to explain how they knew that George Washington ever lived. Among Mrs. Barnes's conclusions are these:

1. History is a proper subject for children from the age of 7.
2. Time is badly understood until 12 or 13, hence it should be visualized by means of charts.

3. Children should not be specially trained or urged in inference until 12 or 13.

4. History should first interest itself with the biography of heroic characters.

5. These biographies should be of men who fight, and hunt, and build, rather than of those who write, or think, or legislate.

About two years ago it occurred to me that some criterion of the value of educational work might be found by ascertaining the attitude of children toward the different subjects of the curriculum. If it be granted that a suitable subject properly taught interests a child, it follows that where interest is wanting, the fault must lie either in the course of study, or in the teaching, or in both.

Having obtained permission from the Principal of one of the Boys' Departments of a New York Public School, I requested the teacher of every class to submit to the pupils these four questions:

1. What subject or subjects did you particularly like in your last class?

2. Why did you like them?

3. What subject or subjects did you particularly dislike?

4. Why?

X The study was made in September, just after the long vacation. It was assumed that any like or dislike that was remembered after ten weeks must be a reality and not a mere passing whim. If such questions were put in the middle of a term the answers would have far less value than under the conditions

¹ Studies in Education, p. 43.

adopted, because a child is prone to *like* the subject in which for the time being he gets high marks. By summoning his judgment to a period long past, only those experiences which, on the whole, impressed him most will be taken into account.

The number of pupils examined was about a thousand, but for various reasons only 756 papers were available for study. The results were tabulated by ages, grades, subjects, and classes. In Table No. 1 are shown the results by age and grade.

In September, 1897, two more studies were undertaken along the same lines, one of a New York Mixed School, and another of the Public Schools of Winona, Minn.¹

In Tables 2, 3, 4, and 5 are found the results of these studies, aggregating, with the former study, returns from 2,137 pupils.

The columns of each of the tables have been averaged, and these averages may be taken to measure the interest of children in their school studies. No children below the third grade were examined. For the ages of 8 and 17 only a few returns were received, consequently the figures found in these columns have but little value. If we accept the Herbartian contention that interest is a test of good teaching, then, in a good school, the pupils ought to become more and more deeply interested as they pass from age to age and grade to grade. Table No. 1 shows that this is definitely the case in the Boys' School of New York, where the averages range in regular gradation from 20 to 37 for ages, and from 18 to 45 for grades. In the Mixed School (No. 4), there is a noted decline of the interest curve, beginning at the age of 13 for both boys and girls. This seems to be due to the teaching in the fifth grade, where there is a remarkable falling off in interest. In the preceding grade 60 per cent. of the girls liked arithmetic, here only 20; 40 per cent. were fond of geography, 44 per cent. of history; now only 21 per cent. care for geography, and 23 per cent. for history.

In the Winona Table (No. 2) there is also a similar dip at 13, and one covering the fifth and sixth grades of girls; the boys, on the contrary, are quite as regular as those of the New York Boys' School. So also in Table No. 4, the boys show less variation than the girls. The principals of these schools may be able to explain these facts. Are they phenomena of sex, or adolescence, or simply results of the teaching process?

In New York the girls are more interested than the boys; in Winona the case is reversed.

¹ Acknowledgment is hereby made of valuable services rendered by the following persons: Prof. E. A. Kirkpatrick secured the Winona returns through the courtesy of Mr. J. A. Tormey, Supt. of the Winona Schools, and my wife tabulated the same. Dr. E. R. Birkins, Principal of Public School No. 10, New York City, secured and tabulated all the returns in Tables 4 and 5.)

No. 1. LIKES AND DISLIKES. NEW YORK BOYS' SCHOOL. (PERCENTAGES.)

LIKES.																	DISLIKES.																
AGE.																	AGE.																
GRADE.																	GRADE.																
8	9	10	11	12	13	14	15	16	17	3	4	5	6	7	8	Total.	8	9	10	11	12	13	14	15	16	17	3	4	5	6	7	8	Total.
No. Examined.																																	
Music,																																	
Writing,																																	
Arithmetic,																																	
Drawing,																																	
Nature Study,																																	
Reading,																																	
Spelling,																																	
Gram. or Lang.,																																	
Geography,																																	
History,																																	
Average,																																	

In this and subsequent tables, the figures at the top represent the ages of the pupils and the grades from which they had been promoted ten weeks before. The next row of figures shows the number of pupils examined in each age and grade. All other figures are percentages, showing what proportion of pupils like and dislike the several subjects of study.

No. 2. LIKES. WINONA.

	GIRLS.																	BOYS.																	Total Boys.	Total Girls.	
	AGE.																	GRADE.																			
	8	9	10	11	12	13	14	15	16	17	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	3	4	5	6	7	8						
No. EXAMINED.	0	7	30	48	50	84	48	37	9	4	0	49	88	57	33	90	317	0	4	15	25	40	55	37	29	3	2	0	31	67	40	26	46	210	527		
Music,	0	0	3	6	6	12	10	11	0	0	0	4	6	14	9	8	8	0	0	6	4	0	0	6	0	0	0	0	0	0	3	0	4	2	2	5	
Writing,	0	0	6	6	6	1	8	25	0	25	0	12	3	5	9	7	7	0	25	6	0	2	6	6	0	50	0	10	4	0	4	4	4	4	6		
Arithmetic,	0	14	33	40	50	41	45	46	33	50	0	37	37	33	54	48	41	0	33	12	50	62	35	50	66	50	0	26	48	50	49	43	43	42	4	5	
Drawing,	0	0	6	4	8	2	10	5	0	0	0	6	3	10	9	6	6	0	0	4	2	7	8	3	0	0	0	0	0	4	5	4	9	4	5	0	2
Nature Study,	0	0	0	0	0	4	8	8	11	0	0	0	1	2	6	8	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Reading,	0	86	43	45	30	21	25	27	11	0	0	45	33	33	24	18	30	0	33	20	15	27	25	18	0	0	0	13	30	22	20	17	22	26	2	6	
Spelling,	0	28	6	23	16	8	20	27	22	0	0	20	10	23	18	16	17	0	0	8	12	14	19	24	66	50	0	6	12	12	16	26	15	16	1	6	
Gram. or Lang.,	0	0	10	14	20	18	31	46	44	0	0	8	11	17	57	27	22	0	25	0	4	10	9	11	33	50	0	10	6	0	12	19	9	17	0	0	
Geography,	0	0	33	25	30	15	35	25	33	25	0	26	18	30	45	21	25	0	50	33	56	45	23	30	29	0	50	0	33	36	42	31	26	34	29	0	
History,	0	0	7	21	40	20	35	23	22	50	0	0	13	40	36	34	24	0	0	20	16	20	31	49	62	66	50	0	9	42	84	56	34	28	0	0	
Average,	0	13	15	18	20	14	23	24	18	15	0	16	14	21	27	20	18	0	10	13	12	16	17	18	20	23	30	0	10	15	17	22	20	16	17	0	

No. 3. DISLIKES. WINONA.

GIRLS.

BOYS.

	GIRLS.																	BOYS.																	Total Boys.	Total Girls.
	AGE.																	GRADE.																		
	8	9	10	11	12	13	14	15	16	17	3	4	5	6	7	8	Total																			
No. Examined.	0	7	30	48	50	84	48	37	9	4	0	49	88	57	33	90	317	0	4	15	25	40	55	37	29	3	2	0	31	67	40	26	46	210	527	
Music,	0	14	14	10	2	1	2	3	0	0	0	8	8	0	0	1	4	0	25	6	8	7	10	0	6	0	50	0	6	12	2	4	9	8	6	
Writing,	0	0	10	2	2	5	2	3	0	0	0	8	5	0	3	0	3	0	25	6	4	5	5	3	0	0	0	0	0	3	10	0	2	4	3	
Arithmetic,	0	14	14	10	4	5	10	11	0	0	0	12	11	0	6	9	8	0	50	14	30	2	2	25	20	0	0	26	12	5	12	15	13	10		
Drawing,	0	14	16	14	8	2	8	5	0	25	0	25	7	3	12	1	8	0	0	14	4	7	7	3	3	0	0	0	13	6	5	0	4	6	7	
Nature Study,	0	0	3	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
Reading,	0	13	12	8	3	8	8	0	0	0	0	12	11	4	14	3	7	0	25	6	8	10	5	6	6	30	0	20	10	0	0	0	0	8	8	
Spelling,	0	14	12	20	13	15	6	0	0	50	0	6	20	2	20	3	11	0	50	53	20	30	21	8	12	0	0	0	50	32	5	0	16	22	15	
Gram. or Lang.,	0	14	20	6	26	11	12	14	0	0	0	26	20	2	10	10	13	0	0	6	16	10	13	25	33	0	0	0	20	15	2	23	24	16	15	
Geography,	0	0	3	20	10	20	8	11	0	0	0	6	22	5	0	14	12	0	0	14	0	10	9	14	6	66	50	0	20	7	0	4	16	9	11	
History,	0	0	7	6	2	8	8	30	22	0	0	0	5	4	24	16	9	0	0	0	0	10	4	0	6	33	0	0	3	4	0	8	6	4	7	
Average,	0	7	11	10	8	7	6	9	2	7	0	11	11	2	9	6	7	0	18	12	9	9	8	8	9	13	10	0	16	10	2	5	10	9	8	

No. 4. LIKES. NEW YORK MIXED SCHOOL.

SOME PRACTICAL ASPECTS OF INTEREST.

503

BOYS.

GIRLS.

	AGE.													GRADE.							AGE.													GRADE.							Total Boys.	Total Girls.
	AGE.													GRADE.							AGE.													GRADE.								
	8	9	10	11	12	13	14	15	16	17	18	19	20	8	9	10	11	12	13	14	15	16	17	18	19	20	8	9	10	11	12	13	14	15	16	17	18	19	20			
No. EXAMINED.	1	10	29	58	74	107	100	49	27	4	5	9	125	104	109	63	0	459	2	9	28	61	79	90	70	46	8	2	52	103	108	98	34	0	395	854						
Music,	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0					
Writing,*	100	40	48	43	61	39	56	35	37	0	52	60	20	55	44	0	43	0	11	36	48	44	50	43	41	62	50	29	38	23	47	68	0	45	45							
Arithmetic,	100	30	10	3	11	8	9	25	4	25	21	10	3	6	3	0	10	0	0	18	12	12	7	3	2	25	0	13	8	10	4	10	0	8	9							
Drawing,	0	0	3	5	4	6	8	4	7	0	0	4	6	7	10	0	5	0	0	4	2	1	2	4	9	25	0	0	2	4	3	15	0	4	5							
Nature Study,	100	30	14	10	5	7	5	10	4	0	12	9	11	5	2	0	8	0	0	18	18	9	4	4	0	0	0	0	0	0	0	0	0	0	0	0						
Reading,	100	20	24	43	22	26	23	24	18	0	34	42	18	15	17	0	26	100	33	36	23	20	16	14	11	0	0	0	0	0	0	0	0	0	0	0						
Spelling,	0	10	0	3	12	13	9	37	19	100	2	6	7	28	41	0	16	0	0	0	3	4	20	15	25	13	0	2	8	7	31	76	0	18	17							
Gram. or Lang.,	0	0	17	26	42	25	15	10	18	0	12	40	21	19	5	0	23	50	22	43	43	41	13	35	9	13	0	38	41	29	10	32	0	29	26							
Geography,	0	20	20	41	46	26	26	22	4	25	0	44	23	25	16	0	26	0	44	48	46	71	38	51	37	62	0	46	64	55	39	18	0	49	38							
History,	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—						
Average,	44	15	15	19	23	16	14	19	12	17	15	24	12	18	15	0	17	17	12	23	22	23	17	19	15	21	6	18	22	17	17	26	0	20	19							

* Not reported.

No. 5. DISLIKES. NEW YORK MIXED SCHOOL.

	GIRLS.																	BOYS.																			
	AGE.							GRADE.							AGE.							GRADE.															
	8	9	10	11	12	13	14	15	16	17	3	4	5	6	7	8	Total	Girls	8	9	10	11	12	13	14	15	16	17	3	4	5	6	7	8	Total	Boys	Girls
No. Examined.	1	10	29	58	74	107	100	49	27	4	58	125	104	109	63	0	459	2	9	28	61	79	90	70	46	8	2	52	103	108	98	34	0	395	854		
Music,	0	0	0	2	1	0	0	0	0	0	0	0	2	0	0	0	0	0	0	3	0	1	0	0	0	0	2	1	0	0	0	0	0	0	0	0	0
Writing,*	0	40	10	26	13	7	6	8	15	0	21	9	13	6	14	0	12	100	33	39	21	25	9	18	11	25	0	33	22	16	6	12	0	19	15		
Arithmetic,	0	10	7	7	2	4	2	2	0	0	7	5	4	1	0	0	3	0	0	11	10	3	7	3	0	0	12	3	6	0	9	0	5	4			
Drawing,	0	0	17	22	19	38	26	20	15	0	9	20	46	28	6	0	25	0	0	18	13	19	13	20	13	13	50	4	26	10	16	15	0	15	20		
Nature Study,	0	30	10	8	4	3	1	2	0	0	12	7	2	0	2	0	4	0	0	11	0	2	1	0	1	0	0	6	1	0	0	0	0	1	3		
Reading,	0	0	10	8	9	3	4	8	0	0	9	9	7	0	5	0	6	0	0	11	4	5	9	7	0	0	10	8	5	0	0	0	5	5			
Spelling,	0	0	14	14	9	15	13	20	4	50	7	13	13	13	21	0	13	50	0	18	21	32	27	33	30	50	0	6	19	40	35	33	0	27	20		
Gram. or Lang.,	100	20	28	29	22	27	10	26	22	25	33	27	14	15	21	0	21	50	11	7	3	11	8	7	4	0	6	12	8	15	0	0	7	15			
Geography,	100	10	17	12	5	9	18	12	11	25	14	13	13	9	14	0	12	0	0	4	18	8	11	6	15	13	0	15	9	6	14	6	0	10	11		
History,																																					
Average,	22	12	13	14	9	12	9	11	6	11	12	12	13	8	10	0	11	22	7	12	10	12	9	10	8	11	6	9	11	5	7	8	0	10	10		

* Not reported.

ARITHMETIC.

In all schools arithmetic is a subject of transcendent interest, the lowest average being 36, the highest 45. Boys are a little more interested in it than girls. The dislike of the subject is almost equally prominent. So much time is devoted to it in our programmes that it affects children very profoundly. More than half the pupils name the subject as either a like or dislike. The average of the likes is 42; of the dislikes, 14. In New York more boys have a distaste for it than girls. In Winona it is the other way.

HISTORY.

Next in popularity is history. The studies of Barnes and Shaw have shown that children like "use" and "action;" hence we can see why history should be a favorite study, inasmuch as it deals with movement in the form of discovery, exploration, and battle. The average of all schools is 38 per cent. for the likes, and 7 for the dislikes.

GEOGRAPHY.

Geography is next in importance. The average likes range from 23 to 29, the dislikes from 11 to 21. The unpopularity of the subject among the girls in Table 5 suggests a defect of method in some of the grades of that school, especially the third, fourth, and seventh.

SPELLING.

What is there in the spelling of the English language to commend it to the heart of a child? Twenty-two per cent. of the two thousand pupils declare that they are particularly fond of it. But nearly one-tenth of all profess an aversion to it. Our New York methods seem to succeed better than the Winona methods.

READING.

Reading enlists the interest of 19 per cent., and 5 per cent. dislike it.

GRAMMAR.

Grammar and Language studies are far from successful in any school, if interest is a criterion. The best work seems to be done in the New York Mixed and the Winona Schools, the average of likes for both being 17 per cent. Boys are much less interested than girls, the numbers being respectively 13 and 19. In New York Mixed School 27 per cent. of the boys dislike grammar. Is it possible to make this study interesting to the average child? If so, we need to examine our methods

and find out why about one-seventh of the pupils like it, one-seventh dislike it, and the rest are indifferent.

DRAWING.

What is the matter with drawing? In one school 9 per cent. (No. 1), in another 8 per cent. dislike it. I charge the dislikes in New York to the old course of study, which has recently been replaced by a better one. For Winona I cannot speak; but it seems strange that in the fourth grade 25 per cent. of the girls and 26 per cent. of the boys should dislike a subject which is supposed to be one of the spontaneous modes of childish expression.

WRITING.

Writing has little attraction for children. One school made no report on the subject; the average of the rest is 8 for the likes and 5 for the dislikes.

MUSIC.

If a foreigner looked at the returns for music he might come to the conclusion that the soul of the American has no sense of harmony. "Heavenly harmony," and only 2 per cent. like it, while 4 per cent. hate it, and the rest are indifferent! A part of this indifference is accounted for by the fact that only a small portion of time is devoted to it (in New York, 10 minutes a day), but even with this allowance, there is grave suspicion that music in the public schools is largely a failure.

NATURE STUDY.

I have left nature study for the last, because the returns seem to me to show a prodigious waste of school energy.¹ Col. Parker insists that nature studies constitute the spontaneous interests of childhood, and should therefore be the "central subjects" of the course of study, all the rest being merely "modes of attention," "modes of judgment," or "modes of expression." If half of Col. Parker's claim is true, how have we sinned against childhood, when only 4 per cent. of our pupils have any interest left in nature, and 7 per cent. profess disgust! In Winona there is utter indifference, less than two per cent. having professed interest, while the rest do not consider it of sufficient importance even to dislike it. In New York the case is a little better, but far from satisfactory. In

¹A friend who was kind enough to read the manuscript of this article suggests that it might be well to make some allowance for the fact that failing to mention such subjects as nature study and music, may be due not to indifference, but to the pupils not regarding them as subjects of study owing to the absence of text books.

Mr. Lancaster's study of adolescence¹ we find that out of the 1,000 eminent men and women studied, 640 were ardent lovers of nature, while only 290 of the same individuals liked any one science. What more eloquent arraignment of our present methods of science teaching could be imagined than this contrast between the love of nature on the one hand and the distaste for science on the other.

Five or six years ago Supt. Seaver made a report on the teaching of elementary science in Boston, in which he said that nature study was gravely deficient, both in method and in results. "Notwithstanding the work of Miss Crocker, the Normal School, and the teachers' school of science," he says, "it remains a fact that the sciences—particularly the natural history sciences—have very little lodgment in our current school work. And this statement must be made more than a generation after the great Agassiz began his work of promoting an interest in the study of natural history among all people, all schools, and all teachers."²

In 1893, Prof. Dolbear, of Tufts College, read a paper in which he said: "The results of the teaching of science in schools of all kinds have been a great disappointment to the friends and advocates of science teaching."

The reason for this disappointment is found in the fact that we have hitherto confused two things wholly different. We have mistaken systematic science for nature study.

No mistake has been more common than the attempt to teach to small children the results of science. This is a psychological error which assumes that what was a normal experience of Newton, Gray, or Darwin, may become an experience of the little child. Who does not know that zoölogy, for instance, is reduced to a skeleton, then presented in abstract and logical form to children as a product of science? Yet neither the logic nor the abstraction is possible to the young learner. The protests of Dr. Hall and Dr. Hodge,³ as well as of Prof. Dewey,⁴ are certainly well taken, and these returns show how utterly futile it is to try to interest children by giving them the abstract, logical, completed summaries of adult science.

REASONS.⁵

The reasons which the children gave have not been tabulated, but below will be found some typical answers.

¹ PEDAGOGICAL SEMINARY, V: 1—p. 61.

² Ed. Review, Oct., '91.

³ Summer School of Clark University, 1897.

⁴ "Psychological Aspect of the School Curriculum," Ed. Review, April, 1897.

⁵ For this selection of reasons, I am indebted to Dr. E. R. Birkins, of New York.

9 YEARS OF AGE.

Likes.

- G. "I like history because it is very interesting."
- G. "I liked to hear about the great men like Columbus."
- G. "Arithmetic, because it teaches me how to add and subtract."
- B. "It was about different country and ours" (History).
- B. "History. It has stories about wars."
- B. "History. It is the interesting early life of our country."
- B. "History and Geography because they are the most interesting of any studies."

Dislikes.

- G. "Arithmetic—because it is tiresome."
- G. "Arithmetic—I thought it was hard."
- B. "Geography—because it was too easy."
- B. "Geography—because it was too hard."
- G. "Geography—because I do not like to look up the map."
- B. "Arithmetic, Spelling and Writing. Because they are the most tiresome studies."

11. YEARS OF AGE.

Likes.

- G. "Arithmetic and Drawing—because they are the best, and the hardest."
- B. "Arithmetic. Because it requires a good deal of thinking."
- B. "Arithmetic History and Geography—because they will help me in later life."
- G. "Spelling, History and Arithmetic—because they were always explained so that we could understand them."
- G. "Grammar as it was like a puzzle."
- G. "Reading. Because it has many tales in it."
- G. "History and Geography—because it is nice to know about the world and its people."
- B. "History. Because it tells of all the great men of the world."
- G. "Spelling. Because it is very important."
- B. "Geography. Because it is something interesting."
- G. "Arithmetic, Spelling, Reading. I liked these studies because they were teaching me to have a good education."
- B. "Arithmetic. Because I had to think."

Dislikes.

- G. "Copy-Book Writing. Because I can't write good."
- G. "Grammar. Because I could never get it right and I used to try very hard."
- B. "History and Physiology. Because I did n't study it enough."
- B. "Drawing. Because I did not have a taste for it."
- B. "Physiology. Because it talks to much about skeletons."
- B. "I dislike no study."
- G. "Music. I did not learn it in the primary and it was hard for me."
- G. "Physiology, as it gave me fancies."
- B. "I don't like spelling very much."
- G. "Geography—because I cant understand it and never will."
- G. "I never knew what to write in composition and writing got me tired."
- B. "I don't like Suffixes because you get mixed up."
- G. "Prefixes. Because they would catch me."

13 YEARS OF AGE.

Likes.

- G. "Geography—because it tells about the world."
- G. "Grammar—because it teaches us how to talk correctly."
- G. "Arithmetic—because it helps us to get a position."
- G. "Arithmetic, Reading—because I was best in them."
- B. "Arithmetic. Because it is used most in business."
- B. "Reading. Because I learn something about great men."
- B. "Geography and History. Because they are more interesting than others."
- B. "History. Because I liked to hear about wars and adventures."

Dislikes.

- G. "Physiology. Because I found it not easy to learn."
- G. "Arithmetic. Because it is very difficult to learn."
- G. "Dictation—because I never got it all right."
- G. "Geography—because I could n't remember it."
- B. "Prefixes and Suffixes. Because they were to dry."
- B. "Physiology—because it was not interesting."
- B. "Geography—because it was hard."

15 YEARS OF AGE.

Likes.

- G. "Geography, History. Because they teach us something about the country."
- B. "If I should go into a wholesale house I would need decimals very much."
- G. "Arithmetic—because I like to puzzle it out."
- G. "Grammar—because it gives us power to speak English properly."
- B. "History—because I am fond of reading about battles and famous men who fought in them."
- B. "Grammar—because it teaches us to speak correctly."
- B. "Arithmetic. Because it is a useful study."
- B. "Physiology—you can help injured people or drowned people."
- B. "Arithmetic—because there is so much reasoning to be done."
- G. "Arithmetic—as it was explained very distinctly."
- G. "Physics—because it is so interesting."

Dislikes.

- G. "I did not care for arithmetic as much as my other studies just because I did not always know how to do it."
- G. "None—because they are all of use to us."
- G. "Composition—because I was not a good composer."
- B. "German—because it is so difficult to get the articles in the right place."
- B. "I don't dislike any but the one I like least is German."
- B. "Physiology. Because business people don't like it."
- B. "Synonyms—because I could not very well understand them then."
- G. "Arithmetic—because I was very poor in this study."
- B. "Grammar—because I did not see what use it would be in business."

17 YEARS OF AGE.

Likes.

- G. "Arithmetic—because it is most important to know how to figure."

G. "Grammar—because it is very interesting to know how our language is formed, and it is also very necessary."

G. "Composition—because I am fond of trying to compose."

B. "Arithmetic—because it is most beneficial."

B. "Geography—because it is a very interesting and useful study."

Dislikes.

G. "Arithmetic—because it is very complex and difficult to understand."

G. "Geography—because there is a great deal to remember."

A FEW NOVEL REASONS.¹

B. "I like Geography because I intend to become a navigator."

B. "I have a strong aversion to verbs."

G. "I don't like writing because it makes my hand taller." (An Italian girl.)

B. "I did not like Drawing because it is so dirty using rubbers." (10 years old.)

B. "I liked them all but I liked History pictorially." (10 years old.)

B. "Arithmetic—because it is the most important thing that we must learn."

G. "Roots—because it puzzles me."

G. "We had to hard Drawing we had to make free hand circles and free hand squeres."

B. "Writing—because it makes you tired." (9 years old.)

CONCLUSIONS.

1. Such a study as this is useful to a principal because it enables him to locate poor teaching. The Teachers' Conference is to remedy defects. I believe this is an infallible method of discovering in what subjects and grades the defects exist. If he finds that 52 per cent. of the third grade like arithmetic, 60 per cent. of the fourth grade, and only 20 per cent. of the fifth, there is pretty conclusive evidence that something is wrong in the fifth grade. And such a discovery may be made in a class whose teacher is in every other respect successful, and has an excellent record.

2. It is useful to a principal, also, because it furnishes a criterion for rating the teacher. I believe that interest, rather than a per cent., is the true test of a teacher's success. The present method of estimating a teacher's success is by the number of facts her pupils remember. If, instead of this, the teachers were tested by the touchstone of interest, what a revolution it would work on the pedagogical balance-sheets of the superintendent's office. Many a teacher who counts himself rich on the basis of past methods, would suddenly find himself bankrupt. And many another, who has perhaps been regarded as a pauper, would find himself the possessor of a fortune. *Some of the most successful crammers are murderers of interest.*

3. If such studies are useful to the principal, they are no less valuable to the teacher. When the study was made in the

¹ A nine year old boy liked his former teacher because "she was not craws."

Boys' School, 76 per cent. of those who studied geometry expressed a dislike for it. I called the teacher's attention to the fact, and he was greatly surprised. On reflection, it occurred to him that the reason must be that he undertook to do more than the class were able to stand. He had been told that he must cover a certain number of pages in a year, and he proceeded to lay out his work accordingly. His pupils happened to possess very meagre average capacity, and so they failed to understand their geometry. There was no time for apperception. In consequence of this study, the teacher reversed his methods and determined that he would cover the ground only as fast as his pupils could do it thoroughly. Three months later he polled the same class again, whereupon 75 per cent. declared that they especially liked geometry.

4. It is known that the majority of pupils in the public schools never reach the higher grades. Very many leave permanently at the end of the third year. Prof. C. M. Woodward has ascertained that in St. Louis the average age of pupils at the time of withdrawal from school is thirteen years. In New York it is not uncommon to see in a school four or five crowded fourth grade classes and one seventh grade. Some of these early withdrawals are made necessary by the poverty of parents, especially of widows. Others are due to the cupidity of parents, who value above a good education the few paltry dollars their children can earn. But is it not also a fact that a large number of children leave school voluntarily because they are not interested in their studies? All truants certainly belong to this class. The hardest part of every teacher's work is the management of the apathetic, uninterested pupils. These are the ones who make most of the trouble in discipline; who tax the teacher's time and patience; who fall behind and injure the record of the class when examinations and promotions come round.

I am one of those who believe that there is no such thing as a "lazy" child. Many are ill, and suffer from a lassitude which is pathological. But the majority of the so-called "lazy" and "indifferent" are simply children who are not interested in the course of study.

Studies like the present will go far to show not only who the uninterested children are, but the reasons they give for their likes and dislikes often suggest a remedy by revealing the obstacles in the child's way.

5. Finally, it is a test of the success or failure in the management of a school or a system. Better than the testimony of the teachers and principals; more certain than any percentages of achievement; more reliable than show-work put up in the class-room or sent to an exhibition, is this silent but eloquent testimony of the children as to the success or failure of methods and courses of study.

THE CHILD AND THE WEATHER.

By EDWIN G. DEXTER, Greeley, Col.

In the following paper, which I hope will ultimately appear in a more elaborated form, I have attempted to show, by means of empirical data, the possible effects of abnormal meteorological conditions upon mental states. Every scientific problem partakes somewhat of the nature of a verification of popular opinion on a given subject, and this one is no exception to the rule. "I feel all wrought up, and fit for nothing, this kind of weather," is a statement we are all familiar with during the dry, windy spells to which our Colorado climate occasionally treats us, and we teachers are sure that during certain phases of the weather, our pupils (of course it cannot be we ourselves) are too exasperating for endurance, while a change in the meteorological conditions brings with it a smoothness and a tranquility of spirits which forms a marked contrast. That the weather has a pronounced effect upon physiological conditions few afflicted with rheumatism or diseases of its nature would for an instant doubt. Indeed, the truth is so patent that we need not give it an instant's discussion. That its effects are so marked upon mental states might be questioned, but that it has an effect of considerable importance is recognized, even by the matter-of-fact business men of our large mercantile concerns. For instance, in the Bank of England, certain sets of books, an error in which would be cumulative and produce disastrous results further on, are locked up, and the clerks set at tasks less intricate and important in character, during London fog, and on days when the weather is particularly depressing in its nature. Experience has taught those in charge that the per cent. of error increases manifold during such climatic conditions, and that it is money in pocket to conform to them. The same necessity for cessation of certain lines of work during bad "spells of weather," is recognized by the larger banking institutions in New York and the other eastern cities, and a rotation of work in conformity to them is rigidly observed. It has been the universal reply, too, by the superintendents of prisons and asylums for the insane, to whom I have appealed for their opinion upon the subject, that the persons in their charge varied so markedly with the meteorological conditions, that no man who had ever had their experience could for a moment doubt that the relation between weather and emotional states was any other than cause

and effect. When asked, however, what definite conditions of the weather tended to be most productive of emotional abnormalities, no satisfactory answer could be made, and we were as much at sea as ever.

A principal of one of the large boarding-schools for boys, a Quaker school in eastern New York, made some very interesting statements corroborative of the general belief I have already stated. They were given me by a former Colorado educator, who was for some years an instructor in the school just mentioned. He said the principal would occasionally come to him, with the assurance of one who knows, and caution him to look out for the boys, and particularly certain boys whom he called by name, saying, "There is likely to be trouble to-day." This had continued for some time, and every warning had proved timely, when the instructor's curiosity with regard to the principal's seeming prescience led him to appeal to his superior for the secret. The answer was that a careful observation for long years had proven to him that certain definite conditions of the weather, as revealed to him by the barometer of a gouty foot, brought with them, or were followed by, a tendency to unruliness on the part of the boys. He also stated that his belief that the weather produced these marked effects upon his pupils, had been intensified of late, since he had been suffering from a severe attack of insomnia, during which he had spent many nights walking the long corridors of the dormitories. Here, on those nights which his previous experience would leave him to believe would be followed by emotional abnormalities, he would hear the boys, from whom he was separated only by badly fitting doors with open transoms above them, tossing upon their beds in imperfect sleep, or moaning and talking in a manner quite unusual to them on nights when the weather was different.

But, you say, that accounts for their unruliness on the following day :— They did n't sleep well !

Yes ; but why did n't they sleep well ?

To be sure, an unusually indigestible supper, or even the worry over some unfinished task, for which he would be called to account on the morrow, might produce just this effect, but it could hardly be supposed that these facts would universally coincide with abnormal conditions of the weather, and it was the indubitable opinion of the good pedagogue in question, that it was to the latter cause, and not at all to the former, that the sleeplessness and petulance of his pupils was due.

It was the seeming certainty that such is the case, as shown by the incident just related, and observations of a somewhat similar nature which all of us have made, together with the fact that we have no exact knowledge of the definite meteorological

logical conditions productive of such results, that led me to undertake the problem outlined in this paper.

Its solution is three-fold in its nature :

First. A determination of the exact weather conditions for days on which misdemeanors requiring corporal punishment have occurred in public schools of Denver since September, 1883, and a comparison of those weather conditions with the normal.

Second. A similar comparison for those days on which murders, suicides or attempts to suicide have taken place in the same city, within the same time.

Third. An attempt to study the same conditions in the same manner, with regard to their effects upon horses, as shown by the frequency of runaways.

We fully recognize that all these effects might have been due, and perhaps were, in every case *directly*, to some other cause than the weather, but the question still confronts us, would those direct causes, for instance, the tendency to be insolent, on the part of the boy—the loss of position by the would-be suicide, or the sudden fright by the horse, produce the tabulated result had not the meteorological conditions brought about a nervous tension, tending to make these results more probable? Light can only be thrown upon this problem by generalizations made from a large number of observations. In the problem with the school children, which is the only one treated in this discussion, two facts tend to impair the validity of the data.

First. In the notes sent Supt. Gove (the only records available), the principals never failed to mention the exact date on which the punishment was administered, but in some cases, that of the misdemeanor was left uncertain.

Second. It is quite possible that the misconduct was, in many cases, only "the straw which broke the camel's back," and no worse than some preceding it which had been left unpunished. We can, however, suppose that some misdemeanor had been the immediate cause of the punishment recorded and tabulated, disregarding the possibility of others.

The records showed 606 cases of corporal punishment in the public schools of Denver, between Sept., 1883, and June, 1897. (See upper number marked "grand total" on plate No. 1.) Of these: 69 were in January, 80 in February, 60 in March, 65 in April, 62 in May, 4 in June, 35 in September, 89 in October, 83 in November, and 59 in December. (See upper numbers marked "total," at bottom of same plate.) Since the months of February, October and November show a somewhat equal distribution, and all the other months of the school year are broken into by vacations, except May, the data fail to show that the time of year has any marked effect upon the tendency

WIND

In each of the tables used in illustration of this paper, the number near the tops of the small squares represents the number of misdemeanors in the public schools, the left of the two midway from top to bottom, the murders; the one at the right, suicides or attempts to suicide; the bottom one, cases of recorded horse-runaways in Denver, for the months shown at the

top of the column and meteorological conditions shown at the left.

In the preparation of these tables, profile paper was used, ruled in inches and tenths, and dots were put in for each class of data, to represent graphically the exact reading. Finally the dots were counted for each inch square, and the number set down as shown in the accompanying tables. In photographing the larger charts for these, however, the one-tenth inch squares and the dots, for the most part, failed to show.

The table marked "wind" shows, at the bottom, the monthly totals for all classes of data, and in the corner, the whole number of observations for each class. Within the squares, the figures show the number of days having tabulated data, on which the wind reached a maximum velocity shown by the numbers at the left. A little addition shows us that the number of days on which this velocity was less than ten miles per hour, was 49; 10 to 20 miles was 302; 20 to 30 miles was 140; 30 to 40 miles was 60; 40 to 50 miles was 32; 50 to 60 miles was 4; more than 60 miles was 9. Since the mean maximum velocity for Denver comes within the decade from 10 to 20, we shall consider any reading within that decade, as normal. We find that just about one-half of the tabulations come within those limits (normal), leaving the other half distributed over the other velocities which might well be considered abnormal. But the records at the Weather Bureau show that 61% of the maximum readings are within our prescribed normal limit, giving us, from this generalization, a proportion of 6.5 in favor of abnormal anaemometrical conditions. Of these abnormalities, excessive velocity seems most disastrous, since the proportion of cases above the normal is to those below, as 5 to 1.

Beside considering the maximum velocity of the wind, its total movement was also tabulated, although it does not show upon the plate. By "total movement" is meant the entire number of miles registered by the anaemometer for the day. For Denver, the mean total daily movement for the year is about 156 miles, being a little higher in the spring, and a little lower in the fall.

In tabulating the data, I find that 3 misdemeanors occurred when the movement was above 450 miles; 12 between 400 and 450; 23 between 350 and 400; 34 between 300 and 350; 40 between 250 and 300; 88 between 200 and 250; 79 between 175 and 200; 206 between 125 and 175 (normal); 83 between 100 and 125, and 37 under 100. I have considered daily movements between 125 and 175, normal. That is days which could neither be considered windy nor calm, but with the gentle breeze which is most pleasing. But 206 offences were committed under these conditions (one-third), while the government

reports show that 50.1 of the days fall within them. By this calculation we have a proportion of 5.3 (about) in favor of abnormal anaemometrical readings.

PLATE II.

BAROMETER.

	JAN.	FEB.	MAR.	APR.	MAY	JUNE	JULY	AUG.	SEP.	OCT.	NOV.	DEC.
26.50	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0
26.00	1 0	0 3	1 0	0 9	3 9	0 0	4 4	4 2	2 6	1 2	2 2	2 4
25.50	2 6	3 8	2 5	2 16	3 3	8 3	10 11	6 14	2 18	5 22	3 31	1 12
25.00	5 3	1 4	2 2	0 0	1 3	2 3	5 10	1 10	1 4	5 5	2 9	2 7
24.50	4 5	3 5	9 6	3 3	16 20	8 9	16 14	13 17	16 10	5 12	9 13	8 31
24.00	2 1	3 6	2 0	1 13	5 0	0 0	8 10	10 12	17 23	3 30	2 22	2 22
23.50	1 5	4 3	6 20	5 5	11 13	5 4	8 10	10 12	17 23	3 30	2 22	2 22
23.00	2 4	2 1	2 8	3 30	2 9	8 2	0 4	1 2	7 9	1 4	5 9	2 13
22.50	3 1	4 7	11 12	3 8	5 15	5 4	0 3	0 0	0 3	4 6	5 18	4 9
22.00	0 3	2 0	4 2	1 2	1 3	3 1	0 0	0 0	0 3	1 5	0 3	1 7
21.50	0 6	1 3	0 7	1 3	0 6	0 0	0 0	0 0	0 0	1 3	1 3	0 3
21.00	0 2	0 1	0 1	0 3	0 2	0 0	0 0	0 0	0 0	0 0	0 0	0 0
20.50	0 1	0 1	0 1	0 2	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0
20.00	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0

The tabulation of the barometrical readings is shown in Plate No. 2. The heavy black lines represent the normal barometric curve for Denver for each month. Although this is practically the mean for the maximum and minimum readings, it represents, perhaps, more exactly, the barometric conditions for what we would call "fine weather;" that is for those days which are most exhilarating and freest from depressing conditions. In this, as in the other tables, the numbers at the tops of the squares represent the recorded misdemeanors in the public school for the month shown at the top of the column and the condition at the left. Since in this, as well as in the temperature and humidity tables, both maximum and minimum readings were tabulated without distinction in this summary, two readings for each day are represented, making a

total twice that of the number of misdemeanors. An inspection of the table shows that for days on which either of the readings was between 24.70 and 24.80 (practically normal), there were 200 tabulations, while 1,012 were without these limits. This is, perhaps, limiting the "normal zone" too narrowly. A study of the conditions, however, shows that a maximum reading above 24.90 and a minimum below 21.60, may with certainty be said to be abnormal, since but 32.5 per cent. are outside of those limits. Our table, however, shows 49 per cent. to be outside of them arguing that emotional excesses, as shown by a tendency on the part of the pupil to be unruly, vary with abnormal barometric conditions. We cannot say that we have here, cause and effect, since barometric abnormalities are always the conditions accompanying other peculiar meteorological states, and since it has been impossible to tabulate the data in such a way as to be able to compare all the conditions for a single day, with all those for another day, or with the normal, we can only say that such variations are concomitant.

My deductions from this study, in spite of the fact that misdemeanors occurred on 25 per cent. of the days on which the barometer reached its maximum or minimum for the month, while the law of probability would give us but 6 per cent., would be that the direct effects of barometric pressure are the least of any of the conditions studied.

This deduction would be supported by the fact that in coming to Denver from the sea-level (a difference of 5 inches in barometric reading) or even going to the summit of Pike's Peak (a difference of 11 inches), no marked emotional excesses are noticeable.

In the study of the temperature table (Plate 3), it is necessary to bear in mind the fact alluded to in the last discussion — that the numbers (which are arranged similarly) represent maximum and minimum readings indiscriminately. The black lines show the means for both of these readings for each month. That is, for January, the mean maximum for the month was 44 degrees and the minimum 18 degrees Fahrenheit. It is safe to suppose that all the readings below the minimum mean are minimum readings, and all those above the maximum mean, maximum readings, while those between the two means are indiscriminately both. If this be a fair supposition, the figures beyond the means represent misdemeanors, while those between them, for each month, must be modified to put them upon the same basis.

This fact makes it difficult to compare abnormal thermometric conditions with the normal, but we can, with very interesting results, compare the two abnormalities — excessive heat and

PLATE III.

TEMPERATURE.

	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
90	0 0	0 0	0 0	0 0	0 0	2 3	8 11	4 5	4 1	0 0	0 0	0 0
80	0 0	0 0	0 1	1 3	12 6	11 5	4 8	12 18	11 3	3 1	0 0	1 2
70	0 0	0 0	2 5	5 3	11 6	4 5	3 6	4 6	3 5	4 9	0 8	1 0
60	0 3	0 6	16 5	15 3	7 12	4 1	6 11	3 5	3 5	3 8	5 16	1 19
50	0 2	5 5	5 9	3 8	6 13	4 9	13 13	17 14	12 10	3 1	6 2	3 9
40	5 2	7 9	9 6	1 2	11 17	3 4	0 0	1 1	7 8	9 6	2 4	5 7
30	0 8	2 10	4 15	7 12	5 21	2 3	0 0	0 0	0 2	9 8	9 11	4 14
20	3 4	3 6	9 11	4 2	0 0	0 0	0 0	0 0	0 1	1 3	1 7	5 14
10	0 2	3 2	1 2	0 0	0 0	0 0	0 0	0 0	0 0	0 1	0 7	1 4
0	0 0	0 1	0 1	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 3

excessive cold — and note their seeming influence upon neurotic states.

Every month, without exception, shows a great preponderance of misdemeanors on days when the heat was abnormal, over days when the cold was unusual, and this is particularly true for the warmer months. For instance: in April, 36 misdemeanors when the heat was abnormal, to 23 for a similar condition of cold; May, 37 to 4; September, 16 to 8. Since school is not in session during the hottest months of the year, this class of data cannot be studied for them, but the record of suicides shows the fatal effects of excessive heat. In July, for instance, 17 suicides during abnormal heat and none during abnormal cold. In August the proportion was 23 to 1.

In the winter time, judging from the notes of the school principals, from which I get my information regarding misdemeanors, the considerable number of punishments recorded for conditions

below the normal mean, were largely due to opportunity, rather than any necessity to work off superfluous energy. Many of the notes mention snow-balling, and other attractive sports of the winter season, as the cause of the youngster's tribulations, and since these could not be considered an element of probability in the warmer months—nor is there perhaps, anything quite so seductive to offset them—their effects may have been considerable upon our tabulation for the winter months.

PLATE IV.

HUMIDITY.												
	JAN.	FEB.	MAR.	APR.	MAY	JUNE	JULY	AUG.	SEP.	OCT.	NOV.	DEC.
	7 21	10 10	10 513	17 21	5 56	0 21	0 00	0 01	2 21	5 32	6 12	2 10
90	14 12	14 25	8 06	18 16	11 14	4 44	2 22	2 26	0 22	16 16	6 23	10 02
80	23 22	10 26	16 18	9 12	12 810	3 32	5 55	5 57	2 23	22 13	16 24	19 11
70	31 23	15 32	15 123	10 3	13 76	6 67	0 75	0 711	15 45	8 34	21 09	17 70
60	22 23	23 310	13 82	19 44	18 57	0 32	0 39	0 35	6 53	10 47	20 26	16 36
50	34 11	20 24	13 42	7 23	14 12	5 55	0 84	0 46	6 911	13 22	12 73	7 48
40	11 63	20 74	21 74	12 33	13 128	2 32	0 48	0 65	6 93	22 35	15 38	13 426
30	18 25	20 43	15 47	20 42	14 42	3 35	0 428	5 56	16 710	32 15	21 56	23 39
20	18 03	10 14	15 43	18 13	17 10	10 05	4 47	5 58	11 10	6 56	16 8	3 9
10	5 05	0 00	2 02	5 00	3 03	0 00	1 02	2 00	1 01	1 01	5 01	0 00

In studying the humidity table (Plate 4), we must also note that the figures in the squares represent the two readings, maximum and minimum, for each day tabulated.

The mean humidity for Denver varies from 45 per cent. in the summer months, to 54 in January and February, though this curve is not shown upon the table. An inspection of the table shows that for each month, almost without exception, the readings for the decade of per cents, including the normal or average is less than for those more abnormal, making this, perhaps, the most interesting and conclusive of any class of data

studied. For example, for April the readings for each decade of per cents., beginning with the upper, are 17-18-9-10-19-7-12 20-18-7. Since for April, 48 per cent. is normal, and the reading for the decade 40-50 is 7, this point is well illustrated. It is not so well shown by some of the months, still with all the same general curve may be observed. When, too, we take into consideration, the fact that, as was the case with the thermometer readings, those nearer the normal represent the less important readings (from our point of view) of days already represented by a more abnormal reading, the effect of excessive moisture, as shown by a great humidity, and excessive dryness, as shown by small humidity, is all the more marked. This may be shown more empirically by comparing percentages. For instance, the percentage of days having tabulated misdemeanors (out of the 606 considered), on which the humidity was between 90-100, was 11 (per cent). The actual percentage of days during the school year, on which that excessive amount is reached, is 3.6 for humidities between 80-90 as shown by our tables, 16 per cent. ; actual, 7.6. Between humidities of 10 and 20, about 16 per cent. shown by our tables to 25 per cent., actual. Between 0 and 10, 5 per cent. to 3 per cent.

We have here, seemingly, evidence that abnormal conditions of moisture, whether great or small, effect mental states, though we are forced to conclude that the direct physiological influence of the two abnormalities differ, and very likely the neurotic states tending to produce irritableness in our children are dissimilar.

The stickiness and unpleasant sensations common to days when the humidity is great, together with the fact that the sensible temperature is greater under such conditions, might give rise to a sensorial irritableness which could not be experienced when those conditions were wanting. It is also just as true that the very reverse of those conditions are accompanied by electrical states, as yet but little studied, which seem to be productive of, or at least accompanied by, neurotic abnormalities which are very pronounced.

In looking over the monthly bulletins at the Weather Bureau, I was much amused at the remarks appended by a very observant voluntary official in one of the mountain towns. One statement, which bears upon the point in question, was as follows: "Humidity for the month very low, which has brought about an electrical condition which has set every one to fussing and fighting." Exactly what this electrical condition so tersely commented upon by the weather observer is, is not known, nor has the Bureau studied it sufficiently to make any reports upon it. It is certain, however, that in Colorado it is present during periods of the lowest humidity, even lower than are ever reached

in the moister regions of the lower altitudes, and an interesting comparison might be made between the readings of this table, and similar data collected in those altitudes.

A tabulation of the days on which the precipitation was one one-hundredth of an inch, or more, shows that 106 misdemeanors, or a little more than 16 per cent., occurred under those conditions.

A comparison with the normal number of rainy days for the months of the school year, which is also 16 per cent., gives us no increased probability of misdemeanors on rainy or snowy days.

Of the 606 days tabulated, 75 were of the denomination classified at the Weather Bureau as "cloudy," 256 "partly cloudy," and 271 "clear," giving percentages of 12.5, 42.6, and 44.9 respectively. Comparing these percentages with 15.5, 43.5, and 42, the normal percentages for the same classes of days, we have little reason to believe that the character of the day has any marked effect.

To summarize in brief the conclusions arrived at in this paper:

First. The time of year seems to have little effect.

Second. Abnormal movement of wind, as shown by maximum velocity, seems to increase misdemeanors 20 per cent. As shown by total movement 66 per cent.

Third. Abnormal barometric pressure, either great or small (or the conditions accompanying such abnormality), seems to increase them 50 per cent.

Fourth. An excessive humidity has the most marked effect. Humidities between 90 and 100 increasing the probability 300 per cent. Between 80 and 90 increasing it 104 per cent.

Fifth. Precipitation seems to have no effect whatever.

Sixth. The character of the day, little or no effect.

We must not, however, consider these factors independently of one another, nor dogmatically conclude that each is of the importance these figures would imply. A much more exhaustive study, from a vastly greater number of observations, would be necessary to arrive at any definite conclusions, and I offer this paper as a mere reconnoitre into what seems to have been hitherto, unexplored territory.

THE INTERESTS OF CHILDREN IN THE READING WORK OF THE ELEMENTARY SCHOOLS.¹

By CLARK WISSLER, Director Psychological Laboratory,
Ohio State University.

Early in October, 1895, the following list of questions was sent out to a number of school superintendents in Indiana, with a request for written answers from the pupils under their charge.²

1. Write the subjects of all the lessons that you remember from the Reader you used last year.
2. Which one did you like best? What was it that you liked?
3. If you were taken to a book-store and told that you might select just one book for your own, what would you take?
4. Give your *name*, *age* and *grade*.

Six of these superintendents had received training in the Departments of Psychology and Pedagogy in the Indiana University, the others were known to the writer personally as men capable of carrying out such directions as were given. The questions were all presented during the same week and all of the pupils in a school wrote their answers at the same hour. The pupils were ignorant of the purpose of the questions, receiving them as an ordinary lesson in composition.

Papers were received from about 2,100 children. From the teachers' reports as to the reading work of the preceding year, irregularities appeared in four different rooms, necessitating the rejection of the papers received from the pupils of the same. There remained in all 1,950 papers, 1,060 from girls and 890 from boys. The following classification presents the gradation by Readers and by the year in the course of study, the number of boys and girls in each Reader, and their ages at the time of writing these papers.

¹ This study was made while the writer was a student at the Indiana University, under Prof. Wm. L. Bryan, and he wishes to acknowledge his indebtedness to him for directions and assistance in working over the results.

² The writer takes pleasure in acknowledging his indebtedness to the following superintendents, without whose co-operation the material for this study could not have been collected: J. F. Haines, Noblesville; T. F. Fitzgibbon, Elwood; D. T. Powers, Paoli; Noble Harter, Brookville; N. C. Johnson, Cambridge City; Lee Ault, Hagerstown; J. R. Sparks, Dublin; J. A. Shafer, Williamsburg.

READER.	YEAR IN COURSE OF STUDY.	GIRLS.	BOYS.	AGES. ¹
Second,	2	236	230	8 - 9
Third,	3 and 4	300	243	9 - 11
Fourth,	5 and 6	323	268	11-13
Fifth,	7 and 8	201	149	13-15

All the schools of Indiana are required to use the State Series of Readers. This study could not have been made without such uniformity in text and course of study. While all criticisms are made with reference to this Series of Readers, they apply in a general way to all books of this class, because in range of subject matter the Indiana Series is a fair representation of American reading texts.

I.

No. 1. Write the subjects of all the lessons that you remember from the Reader you used last year.

The tabulated results of the first question are presented in diagrams, showing the per cents. of girls and boys remembering the consecutive lessons in each Reader. It was found impossible to make a distinction between the two grades using one Reader because pupils would remember some lessons from the part of the book belonging to the other grade.² The Fifth Reader is omitted in this classification because of lack of uniformity in class work.

It will be seen from the diagrams that certain lessons were remembered by a large per cent. of the pupils, others by few or none. In the following will be found a brief characterization of all the lessons remembered by five per cent. or less, of both sexes, together with those remembered by a large per cent.

SECOND READER.

A. Lessons not recalled by any one.

PART I.

(Every lesson recalled).

PART II.

29. "Pretty Is That Pretty Does."—Alice Cary.
A short moral lesson on duplicity.

B. Lessons recalled by not to exceed 5% of both sexes.

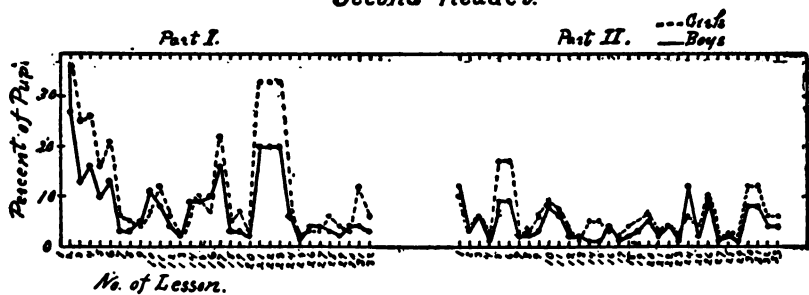
PART I.

8. "What Does Little Birdie Say?"—Tennyson.
The life of a baby compared to a bird in the nest.

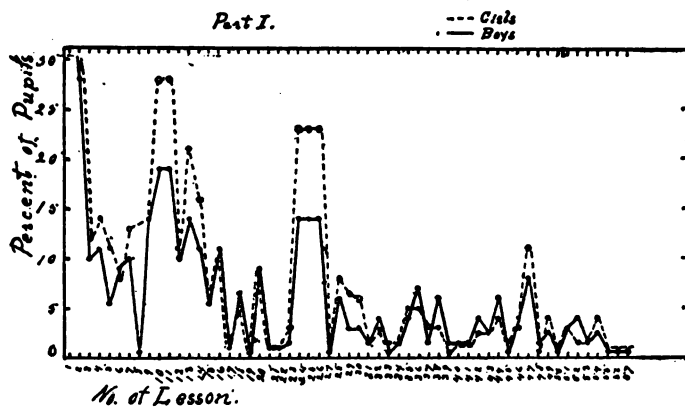
¹ Most of the pupils fell within the range of these ages and the variations were slight and of little significance.

² It is well known that most children read all the attractive lessons over and over before they are formally studied.

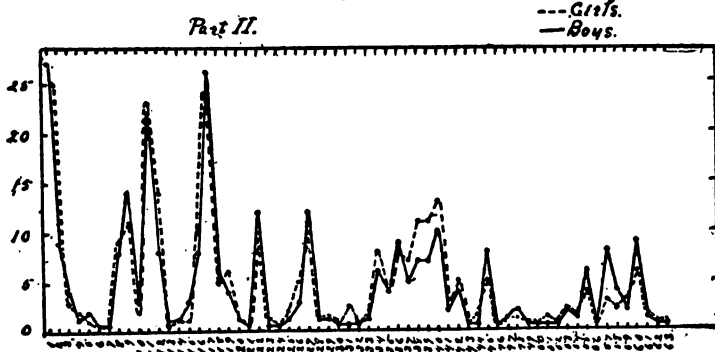
Second Reader.

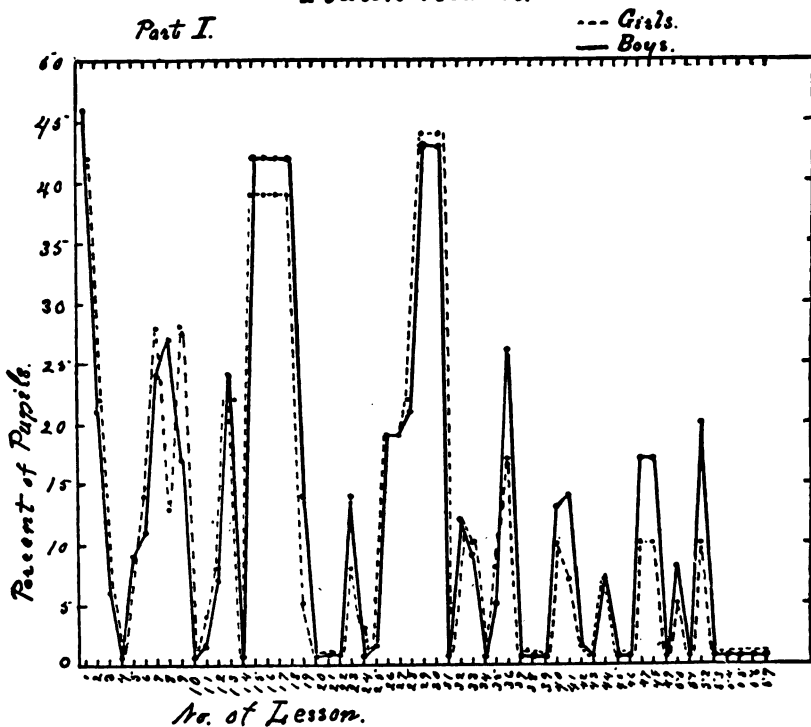
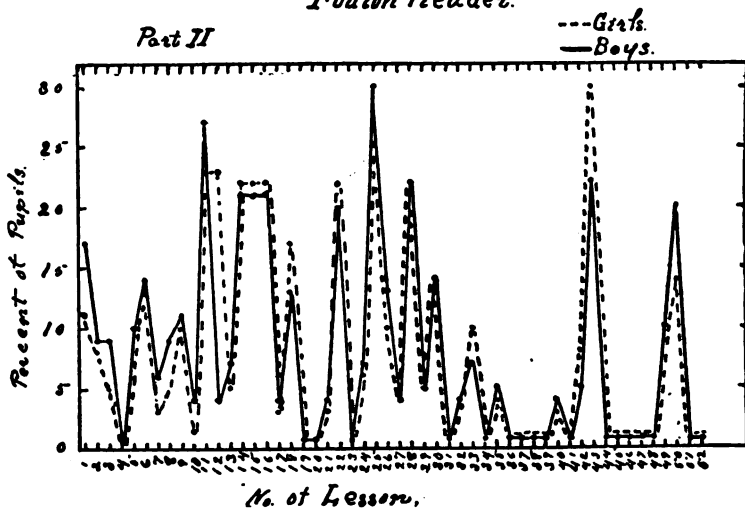


Third Reader.



Third Reader.



Fourth Reader.*Fourth Reader.*

9. A boy imagines his kite as high as the stars; contradicted by a passing man and given a little information as to the correct distance. Instructive.

13. "Keep Trying"—"Drive the nail aright, boys, Hit it on the head," etc.

18. A little boy attempts to tell a dog story; not interesting except as a typical child's effort.

20. "Work while you work; play while you play:

This is the way to be cheerful and gay," etc.—M. A. Stodart.

25. Short poem treating of a rainy day in life.

26. A family of boys telling what "they will be;" one resolves to comfort and love his mother.

27. Poem—six little orphan chickens nestled at night under a feather duster.

29. A lesson on brotherly kindness pointed out in a rather extravagant story of a horse and his blind mate.

30. A fable—"The Humming-Bird and the Butterfly."

PART II.

4. A rule about fretting. "All children should remember this little rule, and begin to follow it while young."

7. "Words that Deceive." "A lie that looks like the truth is the worst kind of a lie."

8. "Twinkle, twinkle, little star."

12. "Speak Gently." A well known poem.

13. A brief account of swallows building a nest over a little boy's window.

16. An eagle flies away with a rattlesnake and is killed by it.

17. "The Drink For You." A temperance poem.

18. A brief natural history of the harvest-mouse.

19. Prose rendering of the "Leak in the Dike."

21. "Great, wide, beautiful, wonderful World." A poetical picture of the world from Lilliput Lectures.

22. Story of a girl who was so kind to the birds that they came to her for food.

28. "The Spider." Similar to No. 18 with a lesson on perseverance.

C. Lessons recalled by a great number of children.

PART I.

1. A life-like sketch of some boys playing at top.

2. Story of a little girl's lamb that remembered her after a long absence.

21, 22, 23. A simple rendering of the story of King Midas, or the Golden Touch.

PART II.

5, 6. A story of a little girl's visit to the inhabitants of the Arctics.

THIRD READER.

A. Lessons not recalled by any one.

PART I.

8, 50, 55, 56, 57. Topical reviews, picture lessons, etc.

19. Story of a rain-drop. Instructive.

PART II.

7, 43, 52, 56, 62, 63. Topical reviews, etc.

6. "Song of Summer."—Mary Mapes Dodge. Short.

16. "Golden-Rod." Poetical lesson on contentment.
 21. Collection of old proverbs.
 24. Kind acts rewarded.
 30. Similar to No. 16. Discontented Buttercup.
 32. Moral precepts in verse form.
 46. Moral lesson on dreaming and doing.
 49. "A seed." Two little verses.
 50. Life of a little girl saved by a bird. (An interesting story to the writer of this paper.)
- B. Lessons recalled by not to exceed 5% of both sexes.

PART I.

17. A short prayer in verse.
21. Moral lesson—smile and the world smiles too.
22. "Can you?"—Mary E. Folsom. Designed as an elocutionary lesson.
23. Short lesson on true courage.
27. A short allegory on human life.
31. Lesson on conduct. Verse.
32. About ants. Instructive.
33. Two pages from "Aladdin's Lamp."
34. A bird's lament for her nest. Verse.
35. Duty to the aged. Verse.
37. "The Little Brown Thrush."—Lucy Larcom.
39. Some games. Instructive.
40. "Why People Eat." Instructive.
41. "Suppose."—Phœbe Cary.
42. Moral lesson—Look to your own faults first.
43. Stories of parrots.
45. Moral lesson on delay.
46. The Dog in the Manger. A fable.
48. Moral lesson on doing and giving.
49. The world's co-operation in making a pudding. Instructive.
52. "Spring is coming."—Mary Howitt.
52. "The Dog and the Shadow."
53. A short bright story of two little pigs.
54. "May's Good-Night."—Mary H. Burnett.

PART II.

3. Short account of how a dime is made. Instructive.
4. Play of children as seen by adults.
5. Short account of silk production. Instructive.
10. "Speak the Truth."
14. Verses on the Beautiful in Character.
15. What Live on Flowers? Instructive.
20. "Father is Coming."—Mary Howitt.
23. The Wolf in Sheep's Clothing. A Fable.
25. "What God Hath Made."—W. B. O. Peabody.
26. A comparative study of teeth. Instructive.
31. About fruit. Instructive.
33. A study of the hand. Instructive.
35. A comparative study of the hand. Instructive.
42. "The Wind and the Leaves." Allegorical.
44. "Sleigh-Bells." A jingling poem.
- 45, 47. About metals. Instructive.
48. Anecdote of a dog.
51. Two verses about a happy girl.
53. About birds' nests. Instructive.

- 54. A poem—All things come from God.
- 58. Longfellow's *Beautiful Rain* in prose form to be put into verse.
- 61. "The Hour of Prayer."—Mrs. Hemans.
- C. Lessons recalled by a great number of children.

PART I.

- 1. A dog that cared for his blind master.
- 2. Hans Andersen's *Five Peas in a Pod*.
- 10, 11. Nellie Grant as the ideal little girl.
- 24, 25, 26. Paul Dombey. Adapted from Dickens.

PART II.

- 1. Biographical sketch of Washington.
- 11. Story of a dog saving a child from drowning.
- 17. A dog saving a boy lost in the snow.
- 40. "Piccola."—Celia Lughton Thaxter.

FOURTH READER.

- A. Lessons not recalled by any one.

PART I.

- 14, 20, 34, 37, 39, 43, 49, 56, 57. Topical Reviews, etc.
- 4. About the hand. Instructive.
- 10. Fables—Farmer and the Stork, The Crow and the Pitcher.
- 21. "The Voice of Spring."—Mrs. Hemans.
- 22. "The Grave."—James Montgomery.
- 31. A few lines from Byron heroic.
- 38. Fable—The Wind and the Snow.
- 45. "Birds in Summer."—Mary Howitt.
- 46. A stanza of four lines. Moral.
- 51. Classification of the teeth. Instructive.
- 53. "Kitty."—Miriam Douglas.
- 54. Riddles and humorous plays upon words.
- 55. Use of metals. Very short and instructive.

PART II.

- 44, 51, 52. Topical Reviews, etc.
- 4. Short abstract discussion of silent reading.
- 19. The Romans. Short extract from E. A. Freeman.
- 20. Short account of the Sahara. Difficult.
- 31. Allegorical story of a leaf. Human life.
- 34. "The Creation."—Addison.
- 36. A story with a moral.
- 38. Some of Poor Richard's Sayings.
- 39. A one-page story of heroism, from Carlyle.
- 41. A part of the 106th Psalm.
- 45. A study in words from Webster's Spelling Book.
- 47. Extracts from the Bible.
- 48. The Christmas Dance, from Dickens's Christmas Carol.
- B. Lessons recalled by not to exceed 5% of both sexes.

PART I.

- 11. A few lines from "How Sleep the Brave."
- 24. A few simple rules of health.
- 25. A model composition with suggestions.
- 42. "Wanted—A Boy." A moral lesson.

PART II.

10. About the atmosphere. Difficult and instructive.
17. Monkeys making a bridge. Instructive.
21. "Babie Bell."—T. B. Aldrich.
27. Biographical sketch of Adams and Jefferson.
32. "Young Lochinvar."—Scott.
35. Biographical sketch of Andrew Jackson.
40. "Burial of Sir John Moore."—Wolfe.
- C. Lessons recalled by a great number of children.

PART I.

1. Sketch of Franklin, with his own story of the whistle.
2. A man telling a king the story of the locusts. An odd story.
7. Preparing for Christmas. A selection from "Little Women."
9. "Ellen More."—Mary Howitt.
13. "The Old Oaken Bucket."
- 15, 16, 17, 18. The Ugly Duckling, from Hans Andersen.
- 26, 27. The Life and Anecdotes of Columbus.
28. "The Day is Done."—Longfellow.
- 29, 30. Story of a dog that wandered off into the world and after a long time saved the life of a child.

PART II.

1. Sketch of Daniel Webster.
11. "The Gemsé Fawn." Pretty story in verse.
12. Mr. Squeers and the Boarding School.—Dickens.
- 14, 15, 16. The Battle of Bunker Hill.
18. "Flowers the Stars of Earth."—Longfellow.
22. "We are Seven."—Wordsworth.
25. Marshall Macdonald rescuing a little drummer boy carried down by an Alpine avalanche.
28. "Lucy Gray."—Wordsworth.
43. "The Little Match Girl."—Hans Andersen.
50. An Arabian horse saves his wounded master by taking the man's belt in his teeth and bearing him home.

SUMMARY.

	SECOND READER.	THIRD READER.	FOURTH READER.
Per cent. of total number of lessons not recalled, - - - -	1	17	33.
Per cent. of lessons recalled by not to exceed 5 per cent., - - -	34.	40.	11.
Per cent. of lessons recalled by a great number of children, - -	10	9	23.
Per cent. of lessons recalled by an intermediate number, - - -	55	34	33.

This characterization of lessons has been presented that the reader might see for himself the number and the nature of the lessons falling under the principal divisions. Space does not permit the discussion of details or a presentation of a characterization of all the lessons of the various readers. The foregoing gives a rough gradation of lessons from the impressive

to the indifferent. Bearing in mind that this study is based upon the returns of about 500 children to each Reader, it is a very severe criticism to say, that no one remembered certain lessons. From this point of view, about 16% of the aggregate number of lessons in the three Readers represents time wasted. Little more can be said for the 28% named by not to exceed 5% of the pupils. That is to say, that 44% of the number of lessons in the Indiana Series could have been omitted without loss to the pupils.

An examination of the diagrams and the foregoing classification leads to the following conclusions:

The first lesson of the different Readers is well remembered, also the continued lesson, or long story.

All of the lessons remembered to any great extent, except a few remembered for their oddities, are in terms of experience the child can realize in himself.

The lessons remembered most are especially natural, or life like.

The curves of the sexes are remarkable in agreement, that of one appearing a duplicate of the other. The principal difference is in the number of lessons remembered, girls remembering more than boys.

The lessons not remembered by any child are too short to excite interest or do not treat of things a child can appreciate.

The mere instructive lesson; the moral and its setting; abstract poems concerning duty, happiness, love of nature, etc., make up the bulk of those remembered by 5%, or less.

II.

No. 2. Which one did you like best? What was it that you liked?

The range of preference was great. In very few cases did more than 10% of the pupils prefer a given lesson. The extreme was for the first lesson of the Second Reader, which was preferred by 21%.

It seemed difficult for many pupils to decide which of the lessons they preferred; *e. g.*, many said they "liked them all (all they remembered), but thought they liked best, etc." But when it came to saying what it was they liked about a lesson no hesitation was apparent. Because of the lack of decision in the former, the writer is inclined to believe that the number remembering a lesson is a better indication of what impressed the children than the number preferring the same.

The following general classification (Table 1) of the lessons

TABLE I.
Distribution of preferences as to Poetry and Prose.

	NUMBER OF SELECTIONS.	PER CENT. OF CHILDREN PREFERRING.	
		Girls.	Boys.
SECOND READER.			
Poetry	18	14	8
Prose	47	86	92
THIRD READER.			
Poetry	40	22	15
Prose	80	78	85
FOURTH READER.			
Poetry	31	33	27
Prose	78	67	73
FIFTH READER.			
Poetry	Work	81	66
Prose	Irregular	19	34
TOTAL.			
Poetry		37	29
Prose		63	71

into poetical and prose, together with the preferences for the same, shows the total number of choices falling upon poetical selections to be large, notwithstanding the number of prose selections in the Readers is more than twice that of poetry. A remarkable increase in the preference for poetry appears in the Fifth Grade where such poems as *Evangeline*, *Thanatopsis*, *Snow-Bound*, etc., were read. In every case the girls lead in the preference for poetry.

Some facts of general significance appear in the table. There is a growth of interest in the poetical coincident with age, beginning with a low per cent. and ending with a high per cent. It is probable that young children are interested only in the rhythm of verse as found in rhymes of the *Mother Goose* type, and that real poetry receives little recognition before the adolescent period. The general preference for poetry in the Grammar Grades (Fifth Reader) is, at least, a vindication of the right of such poems as *Evangeline* and *Thanatopsis*, to a place in the Seventh and Eighth Years of the Course of Study. The poems in the Second and Third Readers are chiefly those of sentiment and thought but the preferences fall upon those in which rhythm is prominent; as

"Two little kittens, one stormy night,
Began to quarrel, and then to fight." Popular, in the
Second Reader.

"Now, such a story I never heard!
There was a little shivering bird!" Popular, in the Third
Reader.

In the Fourth Reader a transition is shown in preference for "We Are Seven," and "Old Oaken Bucket," with scattering preferences for more weighty verses. Then in the Fifth Reader are many preferences for "Rainy Day," "Thanatopsis," "Evangeline," etc. In general, the interest in verse begins in childhood with the rhythm and passes over gradually into sentiment and thought in adolescence. The makers of our text books have not taken this into account.

Since the subject matter of a selection does not depend upon the form, a close view of the children's interests necessitates a classification of the lessons with regard to general theme. Table II presents the relative preferences for selections classed under the given themes.

TABLE II.

Classification of lessons according to theme, showing preferences for each class.

	2nd. R.		3rd. R.		4th. R.		5th. R.		TOTAL.	
	G. B.	%	G. B.	%	G. B.	%	G. B.	%	G. B.	%
Fables,	1	1	3	5	0	1	0	0	1	2
Heroism,	4	3	0	0	10	24	4	7	5	8
Biography,	0	0	12	11	7	6	2	4	5	5
Stories of Animals,	19	21	12	14	14	11	0	0	12	12
Adventure,	0	0	0	0	0	2	0	1	0	1
Information,	2	1	2	4	2	2	3	1	2	2
Moral Precepts,	4	3	9	8	0	2	17	18	7	8
Stories of Daily Life,	39	41	28	24	32	20	35	35	34	30
Description,	4	3	4	0	3	3	33	30	11	9
Unclassified, ¹	27	27	30	34	32	29	6	4	23	23

In this connection some idea of the reasons given for these preferences is necessary. (See No. 2. of the syllabus.) After reading a large number of answers to this part of the question, the following empirical classification was determined upon.

Reasons for preferring :

1. No reason given.
2. "Interesting"—only such as employed this word and it may mean different things in different cases.
3. "Beautiful," "nice," "pretty."
4. All answers indicating the desire for knowledge the ruling factor in the choice.

¹ A large number of pupils preferred selections from other books, and as we had no means of knowing where to look for these preferences, they were placed with the few lessons of the Readers that failed to fall under the other heads. The schools from which these papers were received have in the school libraries several sets of Readers used as supplementary texts.

5. All basing the preference upon the acquisition of a moral principle.

6. All in which the child found pleasure in his experiences reproduced in the lesson; *i. e.*, true to life.

7. All indicating the child's pleasure in heroic action.

8. Miscellaneous and oddities.

For results see Table III.

TABLE III.

Classified as to the basis of the preference.

	2nd. R.		3rd. R.		4th. R.		5th. R.		TOTAL.	
	G. B.	%	G. B.	%	G. B.	%	G. B.	%	G. B.	%
1. None,	20	17	8	9	6	6	5	12	10	11
2. "Interesting,"	0	1	2	2	3	4	4	10	2	3
3. Beautiful,	7	7	5	3	2	4	3	0	4	4
4. Information,	7	9	9	11	6	10	9	10	8	10
5. Moral lessons,	13	13	17	14	42	30	26	25	26	20
6. True to life,	39	33	27	25	21	18	22	18	27	24
7. Heroic,	4	7	17	20	11	24	5	12	10	16
8. Unclassified,	10	13	15	16	9	4	26	13	13	12

From this we find that the children preferred most lessons that suggested a moral truth, a bit of real life or heroic action. The boys lead in the latter. A gradual decline of interest in the life-like is observed with a corresponding gain in the moral and the heroic. In the Second Reader nearly 40% were attracted by the life-like, while in the Fifth about 20%. It is probable that young children are content with the images called up by a selection, while older heads look for hidden significance and abstract principle. To the child it is enough that he loves a thing "because it did" a certain way, but the youth scorns such a make-shift, basing his admiration upon the presence of practical suggestion or laudable personal characteristic. Yet even in the case of the youth, are we sure that he has not employed his reason for the concealment of his original simplicity?

No marked sex difference appears either in preference or in basis of preference, and the uniformity of per cents. in Table II and III shows that in this respect girls and boys stand upon equal footing. The nicety of balance between the per cents. for the sexes gives peculiar force to this result.

Table III is indicative of the interests of the children. Its results differ from the classification by themes because the different phases of the lesson appeal to different individuals. In general, it represents what the child saw in the lesson. Table II gives about 32% of the preferences to Stories of Life, 12% to Stories of Animals, 7½% to Moral Precepts, 1% to Fables, 6% to Heroism, and 2% to the instructive. Table III gives reasons for preference about 25% as life-like, 23% as Moral

Lessons, 13% as Heroic and 9% as instructive. From this it appears that the fable received little consideration, and that even the moral lesson without the formal statement in conclusion, but bearing upon it the marks of a moral purpose, received less attention than the simple story whose moral force was felt and appreciated. It is further observed that the heroic in action is given more consideration than the formal hero, and that lessons designed to be instructive receive little regard from those whose preferences lean toward knowledge. The charge is often made that children have no regard for moral ideas, no feeling for the divinity of right action and no love for knowledge; these results show that children do appreciate such things when presented in terms of their own experience. Take out of their text-books the sermon, the philosophical fable and the cold stiff hero, and paint into them the good, the true and the heroic in colors from life.

III.

No. 3. If you were taken to a book-store and told that you might select just one book for your own, what would you take?

The choice of the children fell upon 246 different books. Twelve of the leading books are given here with the per cents. of the girls and boys choosing the same.¹

TITLE.	GIRLS.	BOYS.
Longfellow's Poems,	11%	8%
Robinson Crusoe,	7	12
"A History,"	5	9
Bible,	5	4
Seven Little Sisters,	4	3
"A Story Book,"	3	5
Black Beauty,	2	3
Uncle Tom's Cabin,	2	2
Little Lord Fauntleroy,	3	1
Man of the House,	2	2
Little Women,	2	0
George Washington,	2	3

None of these books can be said to be popular, unless it be Longfellow. While of the total number of pupils only about 10% chose this book, the number of girls in the Fourth and Fifth Readers choosing the same is about 14% and 25% respectively. Deducting the number of pupils in the Second Reader, since they had little opportunity of becoming acquainted with Longfellow's writing, we find that 14% of the girls, and 10% of the boys chose a volume of his poems.²

¹ For a similar list see Report on Child Reading, by H. C. Henderson. Report of the Department Public Instruction of the State of New York, 1897.

² In a Study in Moral Education, by J. R. Street, PEDAGOGICAL SEMINARY, July, 1897, p. 28, Longfellow is shown to be the most popular author among young people.

In Table IV is shown the distribution of choices among the different classes of books chosen, according to text-book gradation.

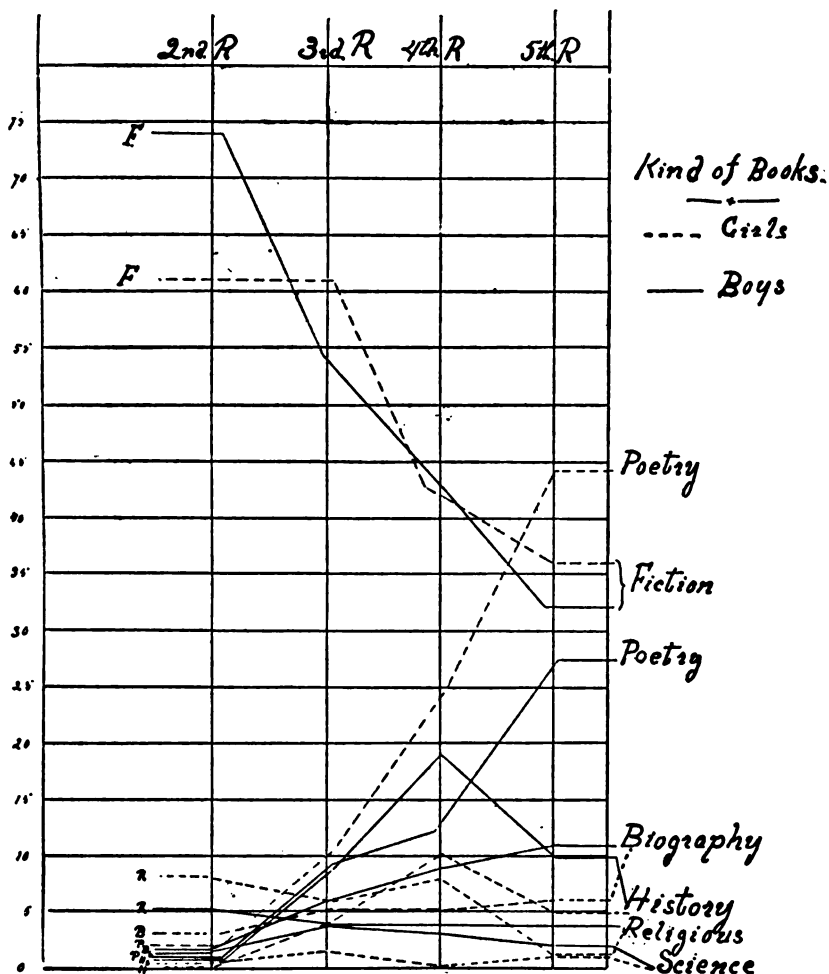
TABLE IV.

	READER.	II.	III.	IV.	V.	TOTALS.	
	Grs.	66%	66%	42%	36%	53%	
1. Fiction,	Bys.	74	54	43	32	53	53%
	Grs.	2	10	24	44	18	
2. Poetry,	Bys.	1	9	13	27	11	14.5
	Grs.	3	5	5	6	5	
3. Biography,	Bys.	2	6	9	11	6	5.5
	Grs.	0	0	0	0	0	
4. Travel,	Bys.	0	0	1	5	1	0.5
	Grs.	0	4	10	5	5	
5. History,	Bys.	1	9	19	10	10	7.5
	Grs.	8	6	8	1	6	
6. Religion,	Bys.	5	4	4	4	4	5.0
	Grs.	1	2	0	1	0	
7. Science,	Bys.	2	4	3	2	3	2.0
	Grs.	0	0	0	1	0	
8. Humor,	Bys.	1	1	0	2	1	0.5
	Grs.	20	6	11	6	10	
9. Miscellaneous and Unintelligible.	Bys.	14	14	8	7	10	10.0

from this it appears that 53% of the children chose fiction, 15% poetry, 7% historical books, 6% biography and 5% religious books. This indicates a great interest in the story and the novel. The poetical works chosen were the poems of Longfellow, Bryant, Riley, Lowell, Whittier, Holmes, and the Cary sisters.

Sex differences are found here. The boys possessed greater individuality of choice. Though the number of boys (890) was less than that of girls (1,060), the choices of the former fell upon 175 different books, the latter upon 157. The range of choice is represented by the average number of pupils choosing each book. The averages for girls were: Second Reader—

4.2+, Third Reader—4.8+, Fourth Reader—3.7+, and Fifth Reader—4.2+: for boys 4.8+, 2.9+, 2.5+, and 2.6+. In both the maximum range was reached in the Fourth Reader.



In order to facilitate the comparative study of Table IV, its data are presented in graphic form. From this it appears:

1. *Fiction*. That there is little differences in the sexes; both showing a gradual decline with the advancement of age.
2. *Poetry*. That the interest of both sexes increases rapidly with age, but that the girls lead with a constant gain.

3. *Biography.* That the boys lead.
4. *Travel.* That books of this kind did not interest either sex.
5. *History.* That the boys lead, but the girls follow in parallel; the maximum is reached in the Fourth Reader.
6. *Religious Books.* That the interest is approximately constant.
7. *Science.* That the general interest is small, the boys leading.
8. *Humor.* That the interest is very small. Humor is the product of the mature, and the highest types are found among the most mentally acute. The appreciation of it begins about the time of adolescence.

The curves show that the child comes to the Second Reader with a great interest in the story, while interests in other kinds of writing have barely taken form. The broadening influence of the school makes him conscious of other things, especially of poetry, where he finds things that cease to be fiction when he feels them true of himself. In the Fifth Reader poetry and fiction become rivals, the former favored by girls, the latter by boys; this results in a decline of interest in other literature.

The curves of the sexes for biography, history and poetry have the same general direction and suggest a greater susceptibility of girls to school influences. The school turns its forces upon boy and girl alike, but meets greater resistance in one or the other. At the start the sexes have much in common, but growth brings divergence.

A general sex difference appears from an examination of the books peculiar to the choice of each. Both lists contain a large and approximately equal per cent. of fiction, but this fiction differs in kind. Among the works of fiction chosen by girls are many books that portray the home-life and every-day thought and emotion. The love story interests the older girls. Many boys preferred fiction reciting the exploits of the adventurer in the garb of the scout, the explorer, the soldier, or the "young man making his way in the world." The books not belonging to the class of fiction are of a practical nature, but show the same differences; the girls choosing more of those relating to deportment and social and domestic training, while the boys led in those relating to industrial or professional lines. In general it seems that the girls have greater interests in the field of action where affection and kindness are striving for the noble and the true, the boys in that field of action where strength, courage and honesty of purpose struggle against the more material environment.

IV.

The usual objection to work of this character is that children have acted in conformity to the desire of appearing well before their teachers. If these children were controlled by such motives, marked differences in the choices of different schools should have appeared. A careful examination failed to show such differences. If such deception upon the part of children is still maintained, it must be assumed that the forty-three teachers in charge of them had common tastes. But the first question is scarcely open to this objection, because the child could win honor only by the number recalled. Any way, the most skeptical must admit that the 1,950 children did remember certain lessons, failed to remember others, and did choose certain things.

In answering the first and second question the children have unconsciously criticised their text books. Their preferences indicate that children demand a text book containing selections complete in themselves, simple and charming in style, dealing with thoughts and emotions common to childhood. It is often maintained that Readers are not intended to please children, but to teach them to read, a serious business in which their own desires should receive no consideration. But we are not considering the matter of mere word recognition—the raised letters upon stoves have sufficed to introduce many a child to this sign manual. Schools make more of reading than this. The child's ignoring the mere word lesson is rational. It is often argued that such lessons are to be enlivened by the teacher; but if the teacher has time for such work, she can select something to her taste. There is no need of crowding out of the child's book matter that would interest him to make room for something for the teacher who, if able to use such material, is competent to select for herself.

In the efforts to serve the popular will, all sorts of things have been put into the school Reader. It is proposed to afford moral instruction by a great array of short sermons and principles upon the theory that some of them may hit somewhere. For the sake of variety, the finest stories are presented in bare outline, and five or ten line selections from noted poems thrown in between. All such lessons fall short of the intent. It is the lesson that the child can live through and make a part of his experience that makes an impression. Moral qualities are nothing until they can be seen and felt in the relations of things. To the child "politeness" is a word in the dictionary, but "polite boy or girl" is a painting upon the wall.

And lastly, there are many who believe that the deep interest aroused by a master-piece of juvenile literature is the child's nascent period for word acquisition.

GENERAL CONCLUSIONS.

1. The literature most appreciated by pupils in the elementary schools is that which presents the true, the beautiful, the heroic and the good in the same concrete way as the busy world around them. Fiction and poetry are the preferred forms.
2. The complete narrative makes a lasting impression, while the story in outline is treated as uninteresting.
3. The child enters school with a great interest in the story, but interests in other lines are awakened and absorb more and more of his interest as he advances.
4. Sex differences increase with the grades. Girls taking more interest in the emotional side of life; boys in the activities and struggles by which ambitions seek realization. Boys show greater individuality.

BIBLIOGRAPHY OF CHILD STUDY.¹

By LOUIS N. WILSON, Librarian, Clark University.

As Librarian of Clark University, I have received hundreds of requests by letter for references on Child Study, and am constantly required to assist special investigators here. To meet this demand I have drawn up the following list of books, memoirs and brief articles up to date, selected from a far larger list kept here. The alphabetical arrangement by authors has been chosen because it brings together the contributions of each writer, but to make the bibliography of use for topical reference there is appended at the end an index of the more important subjects arranged under the leading captions.

Under section II the titles of the leading serial publications dealing with Child Study are given; under section III the Reports, Serial Studies, and Transactions of Societies, and, finally, under section IV, a brief list of current text books on themes most nearly allied to the work in this field. For a larger bibliography, which is contemplated, I should be glad to receive other publications, titles, or suggestions.

This list represents works of all degrees of merit, for I have chosen to err on the side of inclusion rather than of exclusion, and have tried to meet the needs of teachers and parents as well as psychologists.

In the brief notes appended to the publications I have had the assistance of several members of the Psychological department who have kindly looked over the list. I am also indebted to the Bibliographies of Professor Earl Barnes (No. 22), Dr. W. H. Burnham (No. 86), Dr. A. F. Chamberlain (No. 95), Dr. O. Chrisman (No. 105), Dr. G. S. Hall and J. M. Mansfield (No. 210), Dr. E. M. Hartwell (No. 222), Professor Will S. Monroe (No. 321), the Index Catalogue of the Library of the Surgeon-General's Office (No. 590), the Transactions of the Illinois Society for Child Study (No. 559), to Mr. Frederic Burk, whose paper in the current issue of the *American Journal of Psychology* has 109 titles on the growth of children, and to a list of titles on the various phases of adolescence kindly supplied by Dr. G. S. Hall, who is preparing a book on this subject.

¹This Bibliography will also appear in reprint form and can be had, on application by mail, for the sum of 50 cts.

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- 540b. **Journal of Psycho-aesthetics** Edited by A. C. Rogers, Faribault, Minn. Commenced Sept., 1896. Published quarterly. Price \$1.50 a year. Devoted to the care and training of feeble-minded and epileptic children.
541. **Die Kinderfehler Zeits. f. Pädagogische Pathologie und Therapie in Haus, Schule und sozialem Leben.** Herausgegeben von J. L. A. Koch, Chr. Ufer, Dr. Zimmer, und J. Trüper. Beyer und Söhne, Langensalza. Vol. 1, 1896. Vol. 2, 1897. Six Nos. a year. (See Review of above by C. C. Van Liew in Ed. Rev., N. Y., Dec., 1897. Vol. 14, pp. 508 ff. Devoted to the interests of defective children. Although published in German, the contributors represent every country in the world.)
542. **The North Western Monthly**, Lincoln, Neb. Issued monthly. Now in its 8th volume. \$1.50 a year. Has an excellent "Child Study Department," conducted by Prof. G. W. A. Luckey of the Univ. of Nebraska. The issue for July, 1896, is devoted entirely to the general subject of child study. The issue for July, 1897, to the physical child, health, food, exercise, etc.
543. **The Pedagogical Seminary** A quarterly international record of educational literature, institutions and progress. Edited by G. Stanley Hall. J. H. Orpha, Worcester, Mass. Commenced Jan., 1891. Now in its 5th volume. Vols. 1, 2, 3, 4, con-

tain only 3 numbers each, and cost \$25.00 unbound. Subscription price to vol. 5 \$4.00. Has reviewed most of the titles mentioned in this list.

544. **The Psychological Review** Edited by J. McKeen Cattell and J. Mark Baldwin. Commenced Jan., 1894. The Macmillan Co., N. Y. Published bi-monthly. Price \$4.00 a year.
545. **Sammlung von Abhandlungen aus dem Gebiete der Pädagogischen Psychologie und Physiologie** Herausgegeben von H. Schiller und Th. Ziehen. Reuther und Reichard, Berlin, vol. 1, 1897.
546. **Zeitschrift für Schulgesundheitspflege** Redigiert von Dr. L. Kotelmann. L. Voss, Hamburg. Commenced in 1888. Monthly. Devoted to school hygiene in the broad sense. Contains many reports of school children. To be edited in the future by Fr. Erismann, of Zürich. Price \$2.00 a year.

III. REPORTS, SERIAL STUDIES, AND TRANSACTIONS OF SOCIETIES.

547. **Am. Ass. for the Advancement of Physical Education** Report of the 10th Annual Meeting, N. Y., April, 1895. Repub. Press Ass'n, Concord, N. H., 1896. pp. 228. Contains many excellent papers from the physical side. The vol. may be procured from Dr. G. W. Fitz, Cambridge, Mass. Price 50 cts.
548. **Handbook of the Minnesota Child Study Association**, containing suggestions for the study of children. Printed by the Ass'n for the use of Members. Winona, Minn., 1897. pp. 60. With History and Constitution of the Association. S. H. Rowe, Sec'y, Winona, Minn. Price 50 cts.
549. **Michigan Manual of Child Study** Issued by the department of public instruction. Robt. Smith and Co., State Printers, Lansing, Mich., 1896. pp. 32. Sent gratis. Apply to Supt. J. Hammond, Lansing, Mich.
550. **National Congress of Mothers** The work and words of the first annual session held at Washington, D. C., Feb., 1897. D. Appleton and Co., N. Y., 2d ed., 1897. pp. 285. Contains a list of books (pp. 275-280), with prices, and gives information of interest to mothers' clubs. Price 35 cts.
551. **Papers on Anthropometry** Am. Statis'l Ass'n, Boston, 1894. pp. 116, and 15 tables. An important pamphlet. Contains articles by Drs. Boas, Bowditch, Enebuske, Hartwell, Hitchcock and Porter. Also a bibliography on anthropometry in the U. S., including 117 titles. May be obtained of Davis R. Dewey, Ph. D., Mass. Inst. of Tech., Boston. Price 50 cts.
552. **Proceedings of the Association of Medical Officers of American Institutions for Idiotic and Feeble-Minded Persons.** Commenced

- in 1876. Contains many valuable papers on care and training of feeble-minded children. May be obtained from A. C. Rogers, M. D., Faribault, Minn.
553. **Proceedings of the National Educational Association** Child study department, 1894, pp. 995-1023; 1895, pp. 891-943; 1896, pp. 836-892; 1897, pp. 278-297; 585-603; 825-869. The proceedings have of late years reported many papers on child study as the National Association has accorded recognition to the child study section. Irwin Shepard, Sec'y and Treas., Winona, Minn. Price \$2.00 per vol.
554. **Report of the Committee on Color Vision** Proceedings of the Royal Society of London. Harrison and Sons, St. Martin's Lane, July, 1892. Vol. 51, pp. 281-396, with 2 colored plates.
555. **Report of the Commissioner of Education** Government Printing Office, Washington, D. C. Contains many valuable child study articles in the later volumes. Report for the year 1892-93 (vol. 1, pp. 357-391), contains an article on child study, with a bibliography of 232 titles.
556. **Report of the State Superintendent of Public Instruction, New York** The 42nd and 43rd annual reports (1896 and 1897), contain about 100 pages each of reports and original articles on child study. Reprints of these papers by State Supt. Charles R. Skinner of Albany, N. Y., form valuable reports of special investigations in child study.
557. **Studies in Education** Edited by Earl Barnes. Contains many very suggestive and valuable articles on child study, such as methods of studying children, by Earl Barnes. A study of children's own stories, by Clara Vostrovsky. Eight articles on discipline, by Earl Barnes. The development of the historical sense in children, by Mary Sheldon Barnes. Bibliographies of child study, by Earl Barnes and C. J. C. Bennett. A study of children's superstitions, by Clara Vostrovsky. A study on children's interests, by Earl Barnes. Children's ambitions, by Hattie Mason Willard. Children's sense of money, by Anna Köhler, etc., etc. Earl Barnes, Stanford University, 1896-97. pp. 400. Price, in paper \$1.50, in cloth \$2.00.
558. **Studies from the Yale Psychological Laboratory** Edited by E. W. Scripture, Yale Univ., New Haven, Conn. Vol. 1, 1892-93; issued Oct. 1, 1893, pp. 100; vol. 2, Nov. 1, 1894, pp. 124; vol. 3, 1895, pp. 110; vol. 4, 1896, pp. 141.
559. **Transactions of the Illinois Society for Child Study** Vol. 1, 1894-95, 4 nos.; vol. 2, 1896.
560. **Transactions of the Seventh International Congress of Hygiene and Demography** Eyre and Spottiswoode,

- London, 1892. pp. 273. Contains, in addition to other valuable papers, one volume on infancy, childhood and school life.
561. **University of Iowa Studies in Psychology** Edited by G. T. W. Patrick and J. Allen Gilbert. Published annually. The Univ. of Iowa, Iowa City, Ia. Vol. 1 (issued June, 1897), pp. 92. Price 50 cts. Contains three original studies and gives a review of some recent literature on fatigue in school children, right and left handedness, etc.
562. **Verhandlungen des Internationalen Kongresses für Ferienkolonien und verwandte Bestrebungen der Kinderhygiene in Zürich am 13 u. 14, August, 1888.** L. Voss, Hamburg, 1889. pp. 115.

IV. WORKS OF STANDARD REFERENCE ON ALLIED TOPICS.

563. **Bain, Alexander** The emotions and the will. D. Appleton and Co., N. Y., 1876. pp. 604.
564. ——— The senses and the intellect. D. Appleton and Co., N. Y., 1879. pp. 714.
565. ——— Mind and body: the theories of their relation. D. Appleton and Co., N. Y., 1882. pp. 200.
566. **Baldwin, J. Mark** Handbook of Psychology. Henry Holt and Co., N. Y., 1892. 2 vols., pp. 343; 394.
567. ——— Elements of psychology. Henry Holt and Co., N. Y., 1893. pp. 373.
568. **Ball, Sir Robert S.** A manual of scientific enquiry, prepared for the use of officers in her majesty's navy and travellers in general. 5th ed. Eyre and Spottiswoode, London, 1886. pp. 450. Directions to travellers how to collect data, by eminent experts.
569. **Bibliographie der deutschen Zeitschriften-Litteratur** Fr. Andra's Nachfolger, Leipzig, 1897. Vol. 1 for 1896, pp. 184. Price \$1.75. A German Poole. Indexes 277 German periodicals.
570. **Binet, Alfred** L'Année psychologique. Publiée par M. Alfred Binet avec la collaboration de MM. H. Beaunis et Th. Ribot, Paris. Vols. 1-3, 1894-96. Published about June. Each volume contains an excellent bibliography of the psychological publications of the year.
571. **Brinton, Daniel G.** Races and peoples. Lectures on the science of ethnography. N. D. C. Hodges, N. Y., 1890. pp. 313.
572. **Carpenter, William B.** Principles of mental physiology, with their applications to the training and discipline of the mind and the study of its morbid conditions. D. Appleton and Co., N. Y., 1874. pp. 737.

573. **Claus and Sedgwick** Text book of Zoölogy. 2d ed., Macmillan and Co., London and N. Y., n. d. 2 vols., pp. 615; 352.
574. **Clouston, T. S.** Clinical lectures on mental diseases. J. and A. Churchill, London, 1887. pp. 643.
575. **Darwin, Charles** Origin of species. D. Appleton and Co., N. Y., 1878. pp. 458.
576. — — The descent of man, and selection in relation to sex. D. Appleton and Co., N. Y., 1878. pp. 688.
577. — — The expression of the emotions in man and animals. D. Appleton and Co., N. Y., 1896. pp. 374.
578. **Drummond, Henry** The ascent of man. James Pott and Co., N. Y. 3d ed. 1894. pp. 346.
- 578a. **Edinger, Ludwig** Vorlesungen über den Bau der nervösen Centralorgane des Menschen und der Thiere. F. C. W. Vogel, Leipzig, 1896. pp. 386, with 258 figures.
579. **Ellis, Havelock** The criminal. Contemporary Science Series. Walter Scott, London. Chas. Scribner's Sons, N. Y., 1890. pp. 337.
580. — — Man and woman. A study of human secondary sexual characters. Contemporary Science Series. Walter Scott, London. Chas. Scribner's Sons, N. Y., 1897. pp. 398.
581. **Euler, Carl** Encyklopädisches Handbuch des gesamten Turnwesens und der verwandten Gebiete. Herausgegeben von Dr. Carl Euler. 3 vols. Wien and Leipzig, 1894-1896.
582. **Ferrier, David** The functions of the brain. D. Appleton and Co., N. Y., 1886. pp. 498.
583. **Flechsig, Paul** Gehirn und Seele. Veit and Co., Leipzig, 1896. pp. 112. (See also the phrenology of Gall and Flechsig's doctrine of association centres in the cerebrum, by Lewellys F. Barker, M. B., in Bull. of the Johns Hopkins Hospital, vol. 8, No. 70. Baltimore, Jan., 1897. pp. 7-14.)
584. **Galton, Francis** Inquiries into human faculty and its development. Macmillan and Co., London, 1883. pp. 387.
585. — — Natural inheritance. Macmillan and Co., London and N. Y., 1889. pp. 259.
586. **Geddes, P. and Thompson, J. A.** The evolution of sex. Contemporary Science Series. Walter Scott, London. Chas. Scribner's Sons, N. Y., 1894. pp. 322.
587. **Gerhardt, C.** Handbuch der Kinderkrankheiten. Herausgegeben von Dr. C. Gerhardt. Zweite umgearbeitete und vermehrte Auflage. H. Laupp, Tübingen. 6 vols., 1878-1893.
588. **Horsley, Victor** The structure and functions of the brain and spinal cord. Chas. Griffin and Co., London, 1892. pp. 223.

589. **Howell, W. H.** *American Text Book of Physiology.* By Drs. H. P. Bowditch, J. G. Curtis, H. H. Donaldson, W. H. Howell, F. S. Lee, W. P. Lombard, G. Lusk, W. T. Porter, E. T. Reichert and H. Sewall. Edited by Wm. H. Howell. W. B. Saunders, Phila., 1896. pp. 1052.
590. **Index Catalogue of the Library of the Surgeon-General's Office, U. S. Army** Government Printing Office, Washington, D. C. Vols. 1-16, 1880-95. New series, vols. 1-2, 1896-97. (A monumental work and a credit to the nation.)
591. **Index Medicus** A monthly classified record of the current medical literature of the world. Edited by Dr. John S. Billings and Dr. Robert Fletcher. Published by the editors, Washington, D. C., monthly. Vol. 1 issued in 1879. Vol. 19 issued in 1897.
592. **James, William** *Principles of Psychology.* Henry Holt and Co., N. Y., 1896. 2 vols., pp. 689; 704.
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594. **Kraepelin, Emil** *Psychologische Arbeiten. Erster Band, mit 13 Figuren im Text.* W. Englemann, Leipzig, 1896. pp. 678.
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596. **Ladd, George T.** *Elements of physiological psychology : a treatise of the activities and nature of the mind from the physical and experimental point of view.* Charles Scribner's Sons, N. Y., 1887. pp. 696.
597. — — *Psychology, descriptive and explanatory.* Charles Scribner's Sons, N. Y., 1894. pp. 676.
398. **Lubbock, John** *On the senses, instincts, and intelligence of animals, with special reference to insects.* D. Appleton and Co., N. Y. pp. 292.
599. — — *Ants, bees, and wasps. A record of observations on the habits of the social hymenoptera.* D. Appleton and Co., N. Y., 1882. pp. 448. 5 plates.
600. **Luys, J.** *The brain and its functions.* D. Appleton and Co., N. Y., 1882. pp. 327.
- 600a. **Mercier, Charles** *The nervous system and the mind.* Macmillan and Co., London, 1888. pp. 374.
601. **Minot, Charles S.** *Human Embryology.* Wm. Wood and Co., N. Y., 1892. pp. 815.
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607. **Morris, Malcolm** The book of health. Edited by Malcolm Morris. Cassell and Co., N. Y., 1884. pp. 1079. Contains chapters, by various English writers, upon the throat, eye, ear, and the influence of food, stimulants, exercise, dress, climate, etc., on health.
608. **Notes and Queries on Anthropology** for the use of travellers and residents in uncivilized lands. Printed by Taylor and Francis, Fleet St., London. pp. 146.
609. **Paulsen, Friedrich** Introduction to philosophy. Trans. from the 3d German edition by Frank Thilly. Henry Holt and Co., N. Y., 1895. pp. 437.
610. **Reference Handbook of the Medical Sciences** Being a complete and convenient work of reference for information upon topics belonging to the entire range of scientific and practical medicine, and consisting of a series of concise essays, and brief paragraphs, arranged in the alphabetical order of the topics of which they treat. Prepared by writers who are experts in their respective departments. Edited by Albert H. Buck, M. D. 8 volumes. William Wood and Co., N. Y., 1885-87.
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613. **Ribot, Th.** Heredity: a psychological study of its phenomena, laws, causes and consequences. D. Appleton and Co., N. Y., 1889. pp. 393.
614. — — The psychology of attention. Open Court Pub. Co., Chicago, 1890. pp. 121. Price 25 cts.
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628. **Stewart, G. N.** A manual of physiology. With practical exercises. Numerous illustrations, including 5 colored plates. Bailliere, Tindall and Cox, London, 1896; also Medical Pub. Co., Cleveland, O. pp. 796.
629. **Sully, James** Outlines of psychology, with special reference to the theory of education. D. Appleton and Co., N. Y., 1884. pp. 711.
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632. **Topinard, Paul** Elements d'anthropologie générale. Delahaye et Lecrosnier, Paris, 1885. pp. 1157.
633. **Tuke, D. Hack** Dictionary of Psychological Medicine, giving the definition, etymology, and synonyms of the terms used in medical psychology, with the symptoms, treatment, and pathology of insanity, and the law of lunacy in Great Britain and

- Ireland. Edited by D. Hack Tuke, M. D., London. J. and A. Churchill, 1892. 2 vols., pp. 1-642; 643-1477. Contains many articles on the pathological conditions of child life.
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V. SUBJECT INDEX.

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SOME REMARKS ON NUMBER AND ITS APPLICATION.

By D. E. PHILLIPS, Clark University.

The reading of Prof. Dewey's criticism of my article on "Number and its Application Psychologically Considered," in October Number of PEDAGOGICAL SEMINARY, has led me to read the "Psychology of Number" the third time. The criticism necessitates not only a closer consideration of that book, but also an explanation that I should otherwise omit. It is too much to suppose, as this criticism does, that my work was directed against the "Psychology of Number." For two years before it appeared I was associated with Prof. Graham, who has published an arithmetic in which number as *ratio* and the *rational process* constitute the key note. This theory he has held and put into practice for nearly ten years. While his book was in press the "Psychology of Number" appeared, and so completely did it embody his ideas that, at first, he supposed that his principles had been seized and elaborated into a theory. While visiting schools two years ago, I found various systems and modifications in use. In one case, where the idea of measurement dominated the teaching of number from kindergarten up, I asked the teacher who had charge of a class of children six or seven years old, if they could count abstractly or follow the series of names, she instantly replied that she did not know, as she never allowed them to express numbers except as they grew out of their measuring and comparing the material furnished. I found Miss Walter alive to her work and the children full of interest, so much so, that I fear that at first I attributed the power of a most excellent teacher to the principle she used as a tool. Observation of the same kind of work under other teachers impressed me as poor lessons in either number or form, and as accompanied by no more delight than a repetition of the multiplication table. These, and other instances, also Speer's and other late arithmetics, have been in mind in my discussion equally as much as the "Psychology of Number."

On page 430 Prof. Dewey says: "In order to define the problem I may refer to an apparent misconstruction by Mr. Phillips of the doctrine of the 'Psychology of Number.' On pages 227, 243, 267, 273, 274, he implies or states that the ratio idea is insisted upon in this book to the exclusion of the series idea, or at least to the very great subordination of the counting process." Now let us see what intimation there is that these pages refer to that book only or at all. On 227 reference is made to "Psychology of Number," Lefevre's Number and its Algebra, and Schubert's article; on 243 Speer's works and "Psychology of Number" are under consideration; on 267 no books whatever are mentioned, and only the general idea of teaching number by comparison is presented, and the page contains a foot note referring to Russell's article, and pages 273 and 274 are taken up in the discussion of Speer's, Graham's, McLellan and Ames's, and Giffin's arithmetics.

In this connection it is proper to refer to Prof. Dewey's foot note concerning the confusion of the doctrine of Speer and of Dewey and McLellan. On page 430 Prof. Dewey, after explaining the difference, says: "On page 244 Mr. Phillips quotes a sentence from the "Psy-

chology of Number," and in the same connection, as if it bore on its interpretation, makes the following quotation: "Reasoning in arithmetic establishes equality of relations. Reasoning in any subject equality or likeness of relation." This latter sentence is quoted from Mr. Speer." He then wishes to know by what rule of criticism one is justified in quoting from one author to interpret another. First let us examine the connection in which this occurred. On the previous page this same sentence is quoted from Mr. Speer, for which proper reference is given, also the following from the "Psychology of Number:" "It requires considerable power of intellectual abstraction to count three. . . . The manifestation of the conscious tendency in a child to count coincides then with the awakening in his mind of the conscious power of abstraction and generalization. This also indicates discrimination and relation." (p. 27.) After showing that these statements cannot be true, especially in case of the mathematical prodigy, I quote on the following page from Dewey and McLellan: "Quantity is limited quality, and there is no quantity save where there is certain qualitative whole or limitation." Then considering the difference between the reasoning involved in the fundamental operations with the number-series, and mathematics in the higher sense, it is stated that "this philosophy (referring to the three previous quotations) not only ignores any such difference, but any other that might exist." Then follows the sentence quoted from Mr. Speer on the previous page to which Prof. Dewey objects. Now as to whether it is proper to couple these two ideas together, I invite the reader to a comparison of "conscious abstraction, discrimination, and relation," said to be necessary in order to count three with "equality or likeness of relation" as presented by Speer. If they do not express the same idea, then I plead guilty to a misconstruction; but the latter was not quoted as any explanation of the former.

A few weeks ago Dr. White wrote an article aimed at the theory and practice as stated in Speer's books. At once Dr. McLellan came out, stating in *The Intelligence*, Jan. 1, 1898, that "the old fallacy is once more to the front, that of identifying the abuse of a principle with the principle itself." I take it to be the same article taken up by Principal Cox before the George Howland Club, a report of which is found in *The Intelligence*, Dec. 15. Here it is stated that a learned author has attacked the methods employed *more or less* by the teachers in the Chicago public schools. After citing Newton, Euler, and quoting from Dr. Harris's preface to the "Psychology of Number," and a very striking quotation from the book itself, on page 702, the writer says: "It is with the eminent authorities cited above, and not with the Chicago teachers, that the venerable Doctor who criticises our method must settle his differences." Now if there is such confusion as this among the advocates of these theories, an outsider should be excused for going astray.

I have no doubt that the disciples of the Speer system once believed that they were faithfully applying the doctrine of the "Psychology of Number." But in *Public School Journal*, Jan., 1898, there is a letter from Mr. Colwell, stating (speaking for Mr. Speer, for the letter had been shown him and received his approval) that "So far as Mr. Speer's method of presenting mathematics is concerned, it does not contemplate the study of number as ratio or number in any form." From this we understand that it is a study of quantitative relations. "Hence the necessity," he says, "for distinguishing between mathematics and number." (p. 240.) It may not teach *number as ratio*, but the essence of the system is, nevertheless, *ratio*.

In theory, however, Mr. Speer has the advantage of being definite.

In practice no one can help but see the wide difference between the practice outlined in the "Psychology of Number" and that of Speer. The chapter on "The Psychical Nature of Number," the two on "The Origin of Number," and the one on "Definition of Number," are the only chapters I ever have in mind, since they are the only parts of the book in which I can see a sufficient unity. I have before me the reports of nearly a dozen reviewers who frankly confess that they do not fully comprehend it, at least as a consistent whole. Were the above chapters presented alone, and were I required to construct a system of practice, the best I could possibly devise would be in close harmony with Speer's, which, if applied at the proper period and within proper limits, I should heartily welcome. I have just finished a second review of McLellan & Ames's arithmetic, in comparison with several others, in order to see if I might better catch the spirit of the "Psychology of Number." Leaving aside the preface and definitions, I open first one book and then another for comparison. It is hard to examine a book thus and say in what the differences consist, but so far as I can see there are many from which neither the subject matter nor the presentation differs but little. The two prominent things are the problems involving *valuation or measurement* based on the ordinary tables; and the presentation based upon analysis in which ratio is involved. This must represent the *rational process* so emphasized in the "Psychology of Number."

I regret that the discussion must turn so much on this book which, contrary to Prof. Dewey's inference (page 429), I do welcome in my investigation, but not as expressing the whole truth. Since Prof. Dewey claims my material to be in harmony with the "Psychology of Number," the nature of the reply is determined. Weismann's doctrine of the "Transmission of Acquired Characteristics" seems to me to be somewhat paralleled by the position which the advocates of number as ratio are taking. At first Weismann held speech to be wholly acquired and as proof of non-transmission of acquired characteristics. When Romanes showed that the power of co-ordination necessary to the utterance of the needed sounds is *inherited*, Weismann at once accepted it, turning the same to his own account as a case substantiating spontaneous variation and natural selection.¹ Just so the advocates of number as ratio are now extending their theory to cover all mental phenomena in dealing with number by means of the expression—*implied ratio*. I have searched the four principal chapters that I might find "implied ratio" somewhere underscored, or special attention called to it; but only on pages 95, 96, 100, 105, 110, and 115 has any allusion worth mentioning been made to this side of the question; and the connection and inferences are absolutely inadequate to justify the extension of *implied ratio* to cover the large range of facts to which Prof. Dewey must extend it in order to claim the harmony of my material with the "Psychology of Number." It seems to me, if this is true, implied ratio was of sufficient importance to be italicized occasionally at the expense of the oft repeated *how much, so much, how many* (meaning nearly always units absolutely equal), *rational, valuation, etc.* These certainly express the essence of the book. Yet Dr. McLellan emphasizes the implied ratio in his article in *The Intelligence*, Jan. 1, 1898. Prof. Dewey makes reference to "the *practical* activity preceding the rational, "*implicitly using the*" idea involved," and on page 434 has underscored "implied" twice in reference to ratio "which comes to *consciousness* as need demands." What pedagogical significance has this *implied ratio*?

¹ Lloyd Morgan: *Habit and Instinct*, p. 330.

We may say that the concept love *implies* "devotion to humanity," that its strongest *implication* is the sex relation, or, according to Plato, it *implies* "a longing for the good." But how does this modify the mother's pedagogical treatment of her child? Completed concepts are evolutionary products, in fact they are never completed. For practical purposes the caterpillar is not the butterfly.

On the development of the series-idea Prof. Dewey has entirely overlooked the fundamental material in the first part of my article, and, taking up my discussion of the application of the series-idea, devotes over a page to what he considers a confusion of *counting* with repetition of number names. This is especially misleading because it leaves out of account the fact that the series-idea has already been established as set forth in the article. The delight manifested in the series in the various ways mentioned, and becoming dominant in the early life of the mathematical prodigy, is only evidence of a previous development. To say that the exceeding delight, which the prodigy two or three years old takes in following and expressing any series of succession, is no more evidence of counting than the repetition of the alphabet by the ordinary child, is inconceivable. All the conscious intellectual phases of mind indicate that there has been a previous unconscious, or merely symbolic period. First the root then the branches.

In the "Psychology of Number," on page 163, it is stated that counting is at first mechanical, and care must be taken in the interest of the number idea to make it become *rational*. On page 81, dollars, inches, etc., are said to be "units not in virtue of any quality absolutely inherent in them, but in virtue of their use in measuring cost, length," etc. To a supposed reply that this is not so with books, apples, etc., they say: "But this is to fall into the error of separating counting from measuring already referred to. The only point is that this counting gives very crude measurement." On page 48 we are told that "All counting is measuring, and all measuring is counting." And on page 31 we have a discussion of *Relation or Rational counting*. Now the word mechanical counting is used in several places, evidently meaning what the ordinary teacher often understands by *counting*. Miss Shin says that her niece, at 26 months, "was proud of her first independent counting, often chanted the numbers;" again at 35 months she "counted to 19, also *counted by repeating names at random*." (p. 251.)

It seems rather strange that Prof. Dewey should quote to such length, and even italicize, expressions from teachers as if I were responsible for them. I gave them as collected. They should be a lesson as to what teachers consider counting, and that philosophic conceptions will be slow in taking their place. I enter a kindergarten, and ask the teacher to have her children count; they count sticks or blocks to ten perhaps, at least call the names. She then tells me that they like to *count abstractly*, which they do with the greatest delight. The teachers call this counting, and there is the expression of the idea of succession which has grown stronger and stronger from the earliest dawn of consciousness. Prof. Dewey says (page 431), "When we count we surely count something," but in following a series of any kind, the real question is in what sense is the child conscious of that something. When a child sits rhythmically tapping his foot, saying, "one, two, three," etc., even to one hundred, does he have at first a vague idea of muchness to be measured, or, when done, the slightest idea of the somewhat counted? Now in all such counting the process has no conscious meaning whatever save that each number is followed by *this* and preceded by *that*. The same is true of adults after a certain limit is reached. James points out

the fact that after a small number of beats our impression of the amount of time becomes quite vague. The only way then is by counting. Later the conception becomes absolutely symbolic, only a name.¹ The only necessary thing in the series-idea is the consciousness that what is perceived is like or similar to what has just preceded, and when children at first include all kinds of objects in their objective series they are simply expressing a subjective state of mind or a kind of abstract idea of succession previously developed, and which is not dependent upon the immediate objects considered. As I hope to show later, the first numbers, perhaps to 12 or 20, because of our ability to form a concept of them as a collection, their ready use in comparisons, etc., have a kind of psychology of their own. Undoubtedly breathing, respiration, and hosts of other processes help to build up the idea of an endless succession, without our being conscious that they in any wise influence it. Refer to Preyer, Nichols, Munsterburg, and others on the development of time, number, and space.

The existence of the series-idea is not taken for granted, but precedes Prof. Dewey's array of facts in favor of its *origin*. Does he not misinterpret motor movement? Does the child count the movements? Do not the movements simply accentuate the counting? If the child make the series *by* the movements, what guides the movements? are they accidental? The idea of endless succession is not produced *by* the movements he cites, but they are the manifestations of the result of previous and older activity. After summarizing these muscular movements, Prof. Dewey concludes that we get a basis for interpreting the importance of rhythm; but the rhythm in these movements is itself conditioned, perhaps on bodily functions, etc. I especially invite the reader to compare the movements therein taken by Prof. Dewey as the *origin* of the series with the *adjustment of activity* in "Psychology of Number" to which he refers, stating that "Mr. Phillips's own data confirm the statement that number is to be traced back to adjustment of activity," as shown in chapter 3, pages 35 to 44. This chapter is on the Origin of Number. Here the *idea of limit* in boundaries of land, supplies of food, etc.; *economy of energy* by the savage in adjusting the size and weight of his bow; means and end or *valuation*; the child playing with stones needs to adjust and weigh them, the savage must think the distance of the hunting ground, etc.; the idea of Balance or Equation, the means balancing the end sought; Such are the topics discussed in the pages referred to on the Origin of Number from the *adjustment of activity*. Now it seems strange that the movements given in my article being *totally* of a different kind, the earliest being traceable to bodily functions, and manifested in the spontaneity of the child rather than under the necessity imposed by civilization, should be cited as proof of the origin of number as therein presented. I do not look upon the *adjustment of activity* as presented in Psychology of Number as the origin of number, but as a later manifestation of a previous psychic activity.

Prof. Dewey states (page 433) that "not a single one of the questions in the syllabus given by Mr. Phillips have to do with the child's spontaneous experience *with reference to questions of quantity and magnitude*;" and hence he concludes that the data must be one-sided. In the first place it is strange that such one-sided data should support his main contentions; and in the second place you will find (page 245) that the substance of the very questions that he suggests and declares not a single one to be in the syllabus, are the first ones. I

¹ James: Psychology, Vol. I, p. 622.

will quote them: "(a) State cases where children who could not count, have distinguished *more* or *less*, objects, as eggs, young, toys, etc. How fine was the discrimination, how shown, and other details? (b) Describe games of instantaneous guessing of the number of objects in a group, noises in a series, inches, feet, or rods in a given surface, angle, etc." I have discussed (page 242, 248, 249) the results of the first question and also my observations in kindergartens on the same line of comparison. It is stated (page 248) that 135 cases for children were reported, and various examples given. I might multiply such, but, as stated (page 249), it is difficult to determine when it is *form* and when it is *number* that is recognized. We might enumerate a host of comparisons of pleasures, pains, temperatures, morality, etc., but such processes I designate (p. 267), as quite different from counting. Comparison is a process of reasoning *to which* the number series is applied rather than *from which* it is developed. The results of the second question are presented on page 249, and also reference made to similar work by Dr. Lindley on Puzzle Interest.

Without prolonging this let us summarize the points of difference, if possible. So far as my previous work is concerned, I had but three points of difference with the "Psychology of Number." Number in its ultimate genesis is independent of any, or all, vague quantity to be measured, and originates from the idea of succession which is early built up in consciousness and at first involves only the idea of similar recurring sensations without any *vague concept* of a quantity to be made definite. All the experimental work substantiates James's thought that number is primarily strokes of attention. "Little by little our number-series arises."¹ The earliest vague muchness that exists is of a serial increase rather than of a somewhat to be measured. It directs attention backward rather than forward.

In the second place the facts overwhelmingly drive me to reject that part of the "Psychology of Number" which seems to me to identify the development of the number concept with that of general intelligence or reason. As I look over the reviews, I find that I am not alone in this opinion. Indeed we might take another view by taking isolated parts, but if this is not the general spirit pervading most of the book, I am mistaken. In what other light could the sentence already quoted, concerning the ability to count three, be interpreted? What does so much talk about making mechanical counting *rational* mean? Indeed if Speer is not right in virtually identifying this *relating* and *comparing* with *reasoning* in general, in what does it differ? Prof. Dewey says (page 430), that Mr. Speer emphasizes the *how much* at the expense of the *how many*. But the *how many* of the "Psychology of Number" is not of apples, horses, sheep, etc.; it is of an exact unit that can be applied exactly to the *how much*. We are told (page 48) that we "measure distance, weight, bulk, price, cost, etc., to see *how much* there is," and (page 156), that measurement is the very essence of number.

As James rightly observes, "relation is a slippery word." Morgan makes the perception of relations the line of differentiation between animal and human intelligence.² Spinoza designates his second kind of cognition as *ratio*, which consists in adequate ideas of peculiarities of things; reason (*ratio*) considers things as they really are. Again the fact that this book is an application of the Hegelian idea of number doubtless gives us some understanding of the dominant idea of the book—*rational process*. According to Hegel the syllogism is the *ra-*

¹ James: Psychology, Vol. II, p. 653.

² Lloyd Morgan: Comparative Psychology, pp. 217-261.

tional and all that is *rational* is syllogistic. Now take the authors' interpretation of "quantity as limited quality," and have we not the essence of the entire system? I should like to know what *vague quantity* Kant's twelve categories of thought present to the mind, and especially which *one* is selected as the *unit* of measurement. We can find our way out only by a kind of mysticism that "everything is everything else."

As a rule, take from the mathematical prodigy his power to manipulate the series in the four operations, and there is little intelligence of any kind left, yet I would hesitate to say that he could not *count*, although many of them have never counted according to Prof. Dewey's interpretation. Binet gives cases of prodigies where counting has always been a matter of words, and they would become confused if required to make any practical application. In fact, in most cases, they have never applied the series to measurement, unless it can be said that the abstract series is measured on itself.

The third difference consists in my limiting the application of the *ratial*-idea, both pedagogically and in the range of its possible application, considerably more than I find indicated in the *Psychology of Number*. I state (page 245) that "This application of number is the latest and most difficult step, and no attempt should be made to force it on the child before the proper time. *The most general use of the series does not involve this comprehension and application of number.*" Dr. Harris's preface, his review of the book, *Journal of Ed.*, Dec., 1895, and the Report of the Committee of Fifteen contain warnings to this effect. Dr. Prince and others in the same issue of the *Journal* leave the same intimations. It is evident that number in an arithmetical sense may denote absolute equality of the units and hence exact measurement, or it may be used to indicate merely a series of succession with no reference to exact units of measurement. Counting and measuring do not necessarily go together in psychological experience. I have questioned rapid and accurate calculators concerning their mental operations and the training by which this power was acquired; and the idea of a series of succession has been the one thing most prominent in consciousness; neither did they have any special training in ratio or the *rational* process. I further doubt if such training is conducive to accuracy and rapidity. Calculus is the very embodiment of ratio, but we should not have much trouble to find plenty of men versed in calculus and all other forms of ratio, not only unfit to serve in a counting room, but perhaps unfit to become qualified. One could not say the extraordinary power in manipulating the series acquired by Miss Aiken's students was due to ratio or any rational process. It may be said that these rapid and accurate calculators use ratio *unconsciously* or it is *implied*. If the ratio is never made a *rational* process and never a dominant fact in consciousness, why force it into consciousness for the purpose of manipulating the series, and what pedagogical significance can be attached to it? Ratio does dress up thought and make general thinking more acute in such a manner as to fully establish its importance and justify its use at the proper time of application, but never should it be accepted as the chief pedagogical aim in teaching number. Pedagogically, the whole matter seems to me to go back to the question of *discipline* in mathematics versus the *practical application*. Certainly (page 267) I have made all the concession necessary, saying that "this analysis must not be taken as against the use of the *ratial*-idea at the proper stage of development, or even its incidental introduction from the beginning."

What Prof. Dewey means in his conclusion (page 434) by "a conscious series arising through a process of motor adjustment,"

I do not know. If he mean that, while the child in its mother's arms hears the clock ticking; while day and night come and go endlessly; while breathing and circulation continually come to consciousness as a never ending process; there is *motor adjustment*, and a conscious arrangement in a series, then the origin of number takes a widely different and far deeper basis than that outlined in the Psychology of Number. Even if he has reference to the movements which he quotes from my article, the same is still true. If he trace it back to the earliest bodily and functional activity of which the child is conscious, and does not imply by a "conscious series" that the child is conscious of such a formation, but that these forces only later show themselves in the conscious efforts to apply this conscious idea to impressions and things, then there is no difference, save that I do not see the *vague muchness* to be measured. The "rhythm that facilitates at counting," Prof. Dewey must trace back to the above activity, but may find it enlarged in the manner of the development, as shown on pages 235 and 236 of my article.

The fundamental difference may be stated thus: Prof. Dewey, so far as I catch the spirit of his article, contends that counting begins with a vague whole to be made definite, to which a unit is applied, and the *how many* is recognized as a collection of units marking off the somewhat counted. Later comes the period of spontaneous counting as an end in itself. After this period he would have a second application to things for the purpose of emphasizing the measuring or ratio idea. On the other hand, the evidence points to the fact that the idea of succession is unconsciously developed in the child by the never ending recurrence of various similar sensations, that later the force of these processes coming to consciousness manifests itself in the series-idea. *At first it is the series, neither the quantity nor the unit, that chiefly engages the child's attention.* In this sense counting precedes the application of the series to things. Thus the period of spontaneous counting precedes the period of counting in the sense of recognizing a quantity as a collection of units.

It is here that counting should be spontaneous, free from sensible observation, and from the strain of reason. It is here that we find teachers ignoring the series and too soon attempting to have the child recognize a number of dots, blocks, etc., as a collection of units. Here the delight in the series which should be further developed as a preparation for such work, is crushed. True this period prolonged, produces our prodigies, morbid counters, etc.; but it has not received sufficient pedagogical importance, not only in the "Psychology of Number," but in general teaching. The child's interest in, and ability to follow a series precedes the power to apply numbers to things except as they are used as a means of following the series, and not as a preconceived quantity to be measured. Hence, I say, counting precedes the application to things.

Next this mind movement must be fitted to things and impressions. Such an application may emphasize either the *series* or *measurement*, but the latter should gradually grow out of the former only in proportion as the ability to reason and compare develops. Later we have the abstract consideration of number under one of two forms accordingly as we emphasize the practical or disciplinary value of such work. Generally in arithmetic, and for practical purposes, the manipulation of the series which may be independent of ratio is of most importance; for discipline, ratio is the all absorbing thing.

While I recognize in Prof. Dewey's criticism that spirit which would make things right rather than carry a point, I am unable to reconcile his conclusions and other attitudes of these authors with

their work only on the ground of its enormous extension under the form of *implied* ratio. Or it may be that the "Psychology of Number" is a German way of saying what many people already in their way comprehend, but takes volumes to interpret. If we are to judge it by the practical part, and the book already based upon it, the latter must be our conclusion.

My work was undertaken with no theory whatever in mind, and no prejudices so far as I am aware; and what is said there grew absolutely out of my investigation. My interpretation may be wrong, and I invite examination and testing of the facts. It is to be very much regretted that this discussion should force to the front the perhaps uninteresting theoretical part and put in the background the practical part which is of most significance to teachers. Its practical side is of most importance, and must be obtained from a careful examination of the material, suggestions on text-book making, and general conclusions. Aside from any interpretation of the matter, I believe that the progressive teacher will find practical hints of value in the material. This necessitated comparison of views concerning the origin of the number concept leads to a false idea of the main aim and real value of the original work which was published with no expectation of evoking a criticism.

From the practical and pedagogical standpoint it is a question of how much time and importance shall be attached to number work and mathematics as a means of general discipline and preparation for higher mathematics, of which ratio is the very essence. The answer to this question will determine how much emphasis is to be placed on the ratio-idea or *rational process*. "Skill in computing may be acquired without any intelligent apprehension of arithmetical science, and a profound insight into the truth and principles of arithmetic may be attained without much facility in using numbers."

FORMAL EDUCATION FROM THE STANDPOINT OF PHYSIOLOGICAL PSYCHOLOGY.

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Students of modern pedagogy are apt to be confused by the very different notions that exist as to the nature of the educational process. On the one hand are those who tell us that education means the development of mental power, and that subjects of instruction are of value chiefly in so far as they contribute to this end. On this theory the knowledge a subject supplies is a matter of very secondary importance, provided that it is capable of training or disciplining the so-called powers of the mind. It is desirable on this plan to study higher mathematics, not because the knowledge this subject supplies will have much value for the student in after years, but because it affords him a splendid mental training, enables him to think for himself, to grapple with the problems of life. In the same way the advocates of classical study base their arguments, in part at least, upon the discipline that this subject affords. The knowledge obtained in this study may be wholly forgotten, but the mental training secured by this means is a permanent possession. It is in this discipline or training that the value of education consists.

It is a natural result of this view of education that the method of study should be exalted above the subject matter. As President Eliot says, "The method of study and the aim in studying are the all-important things."¹ In harmony with this view the Committee of Ten practically assumed the equivalence of all subjects of instruction, provided that they are taught by equally good methods. Their value to the student is to be measured by the time he devotes to them, and the thoroughness with which they are pursued. If, for example, twice as much time is spent on Latin as on mathematics, it has twice the educational value.

In opposition to this emphasis of the disciplinary value of education, there has always been a strong tendency to make its value consist in the acquirement of knowledge. This opinion is especially prevalent among the great mass of people who do not profess to be experts in theoretical pedagogy, but who, looking at the subject from a common sense standpoint, are inclined to value an education in proportion to the amount of knowledge it supplies that is of practical value for every-day life. In its extreme form this view of education is apt to be narrowly utilitarian. Every educator knows the difficulty of having a subject introduced into the schools that does not minister directly to the material needs of the pupil, and every innovation that has not this bread-and-butter value, is apt to be resented and treated as a fad.

It is not, however, from this element of society alone that we find an emphatic protest against the over-emphasis of the formal value of studies. Evidence of this may be seen in President Baker's minority report to the Committee of Ten, and in President Schurman's criticism of the attitude of this committee in the *School Review*,² and in

¹ *The Forum*, December, 1892, p. 427.

² February, 1894, p. 93.

the growing emphasis that is being placed in the schools upon subjects that are of value for their content, as science, history and literature, as opposed to those that have chiefly a formal value. Between these opposing theories the educational novice has to choose his way or strike out a new path for himself, and any knowledge that can throw light upon this problem ought to be welcomed.

It is one of the merits of Herbartianism that it proposes to settle this question. From the high ground of philosophic principles, it professes to speak with the voice of authority, and gives its decision uncompromisingly in favor of the advocates of knowledge as opposed to those of discipline. This objection on the part of Herbartianism to formal education is so intimately related to the Herbartian philosophy of mind that it will be necessary to examine this briefly, in order to see the foundation on which this decision rests.

According to Herbart, the soul is a simple, indivisible substance which "has no innate natural talents nor faculties whatever, either for the purpose of receiving or for the purpose of producing. It is, therefore, no *tabula rasa* in the sense that impressions foreign to itself may be made upon it; moreover, in the sense indicated by Leibnitz, it is not a substance which includes in itself original activity. It has originally neither concepts, nor feelings, nor desires. It knows nothing of itself, and nothing of other things; also in it lie no forms of perception and thought, no laws of willing and action, and not even a remote disposition to any of these.¹ To this hypothetical soul there is attributed only one power, the ability to react against the pressure that is brought to bear upon it from without, and through this reaction upon its environment the soul becomes possessed of certain states or contents, as we may call them, its ideas. Once these ideas come into existence they are forever imperishable. They may, however, have a greater or a less degree of intensity, which is increased by the fusion of similar ideas and the combination of those less closely related. As ideas become stronger, they have a tendency to occupy the whole field of consciousness, and to force the other ideas to which they are not related into the background until we wholly cease to be aware of them. In Herbartian terms, they have reached the threshold of consciousness. They have not, however, ceased to exist; for under favorable circumstances these pale shades of ideas that in the meantime inhabit the nether world of consciousness may again rise to the surface, and enter the field of conscious life. Their return is brought about by means of the entrance into consciousness of ideas to which they are related, or by the removal of those opposed to them. In order to facilitate its stay in consciousness, each idea seizes upon all others that are of a similar character to it, and by this means it makes itself stronger, and increases its chances of occupying the chief place in consciousness, which is the dominant ambition of any half-respectable idea.

Now on this theory of mind it naturally follows that there can be no such thing as formal education, for apart from the ideas there is practically no mind to be trained. "The ideas really make up the mind. The soul is regarded as little else than the battleground of contending ideas."² Feeling and willing are dependent upon the ideas, and not independent mental activities. All, therefore, that can be done with a mind is to supply it with ideas. These can of course, be strengthened and reinforced by association with other ideas of like character, which will enable them more frequently to rise into consciousness and to exercise a greater

¹ *A Text-book in Psychology*. Int. Educ. Series, p. 120.

² J. Adams: *The Herbartian Psychology Applied to Education*, p. 49.

influence upon the life of the individual, but no general development of mental power is possible independent of the ideas. Hence for Herbart the chief thing in education is the cultivation of the circle of thought, for out of it all the other psychical activities arise. Knowledge, not discipline, is the end of education. The prominent leaders of the Herbartian movement at present are in agreement upon this point. Dr. DeGarmo assures us that the world at large regards formal education as a myth,¹ and Professor Rein says: "The fiction of formal education must be given up."²

However convincing the Herbartian philosophy of mind may be, we must remember it is only a theory. No one knows that ideas exist below the threshold of consciousness. No one knows that ideas fuse in consciousness. Like all theories, Herbartianism must prove its validity by its ability to explain the facts of experience to which it relates, and by its freedom from inherent contradictions in itself. When, however, we submit it to this test, it appears to be defective for the following among other reasons:

1. Because it denies what appears to be an obvious fact of mental life that the mind can be benefited, to some extent at least, by formal training, apart altogether from the value of the knowledge received. Take, for example, such a subject as geometry. Few students, I suppose, have any practical use for this subject that is at all commensurate with the time and energy that is devoted to it, and yet it appears as if the practice it affords the pupil of solving problems for himself, and a cultivation of a habit of clear, consecutive, reasoning, have no small value for the student, whether the knowledge he derives from the subject is ever called into play or not. The same thing is true, to a greater or less extent, of every other subject. It is not wholly the knowledge which an individual receives that makes an education have a value for him, but the power he acquires through the exercise of his mental activities. But we must either give up our belief in the possibility of the cultivation of mental power independent of the growth of knowledge, or reject Herbartianism; for between this ghost theory of ideas and formal education there can be no compromise. Of course we can say with the Herbartians that the latter is only a myth, but it is hard to believe that a so generally established opinion among educated men is wholly an illusion.

2. The existence of unconscious ideas appears to be an absurd and an unnecessary hypothesis.³ Surely the very essence of an idea is that it is an element of consciousness, and an unconscious idea is as much an impossibility as a square circle. Of course it may be said that the idea must exist in an unconscious state, for it can return to us after its departure from consciousness. But that an idea ever returns to us is an unwarranted assumption, as the so-called return or revival in consciousness of ideas can as easily be explained on other grounds.⁴

3. The supposition of a fusion of ideas that is implied in Herbartianism is open to serious objection. It is an attempt to think of mental states in terms of external matter. Chemical elements can unite so as to form a new body, but experience gives us no reason to believe that mental chemistry is possible, nor does reflection even show that such a notion is intelligible.⁵

4. The Herbartian doctrine of the dependence of feeling and volition upon ideas is not generally accepted by modern psychologists.

¹ *Herbart and the Herbartians*, p. 26.

² *Outlines of Pedagogics*. Van Liew's Trans., p. 61.

³ Cf. James: *The Principles of Psychology*, Vol. I, p. 162.

⁴ *Ibid.*, Vol. I, p. 655; Allin, *Ueber das Grundprincip der Association*.

⁵ Cf. James: *The Principles of Psychology*, Vol. I, p. 158.

In its practical application it is apt to overlook the immense importance for the pupil of the cultivation of right habits, the growth of which may be wholly independent of any ideas he may possess concerning them. As Aristotle long ago maintained in opposition to Socrates, the virtuous life does not altogether depend upon knowledge, but in a large degree upon habituation to right modes of life, which unconsciously leads to the development of moral character. This relation of the elements of the psychical life is also at variance with the generally accepted fact that men of thought are necessarily men of action, and that the exclusive cultivation of the intellect may lead to a paralysis of the will, as is illustrated in men of the Hamlet type. So, too, intellectual culture may produce an atrophy of the emotional life, as Darwin tells us was true in his case.

5. As a system of practical philosophy for the teacher, Herbartianism does not sufficiently take into account the importance of the physiological conditions of mental growth, nor help us to understand the different stages through which the child passes in the course of his development. According to Herbartian principles, the ideal education is that in which the knowledge acquired is properly related to that already possessed. But it is not easy to see why, according to this plan, an individual might not be taken at any time of life, and by means of a properly adjusted course of instruction be developed in any direction the teacher might choose. If all development depends upon the reception and assimilation of ideas, there would seem to be no limit to the power of education, and the process might take place at any age. But this is not the case. Physiological conditions may offer an insuperable objection at one time of life to an education that would have been a comparatively simple matter at another. A course of instruction has to be adapted not only to the knowledge of the pupil, but also to his stage of mental and physical development. As Dr. Lukens says: "Each subject has a more or less pronounced 'nascent period,' when interest in and physical ability to learn it culminate. The periods of maximal physical growth are not periods for severe mental discipline. The mind and the body both grow by fits and starts."¹ Hence the advantage of a genetic view of the mind over one that simply affords a glimpse of a cross-section of the stream of mental life. The teacher needs to know something about the stages of mental growth. In this matter the philosophy of Herbart can give us little aid except in the principle of apperception.

If, then, our examination of the Herbartian psychology does not appear to warrant us to conclude that the impossibility of formal education has been established, how will this doctrine fare at the hands of physiological psychology, which is to a greater or less extent adopted by modern psychologists? Perhaps it is desirable to consider briefly in the first place what this science has to say upon the question of mental activities. According to its teachings we are at liberty to dispense with a belief in the existence of unconscious ideas. Each psychical process is occasioned by an excitation of some brain area. When this neural excitation ceases, its mental correlate also goes out of existence, but one similar to it can at any time be produced by a like excitation of the same brain cells. This excitation is all the more likely to occur again owing to the fact that any series of cells that have acted together on occasion have a tendency to repeat the same movement. Hence a psychical process may be occasioned not only by a stimulus from the sense organ as at first, but also by an internal stimulus from some other brain center. Therefore the more relations an idea has with other ideas, that is, in physical terms, the more con-

¹ *Educational Review*, p. 119.

nections the brain cells that are concerned with its production have with other brain cells, the more frequently will such an idea occur, and the more likely is it to form a stable part of the individual's thought. All that is explained, therefore, by the Herbartian principle of apperception, may as readily find its explanation in the nature of the physical basis of consciousness, without necessitating our acceptance of a belief in the impossibility of formal education.

What, then, will formal education mean from this latter standpoint? Perhaps it is necessary to analyze a little more closely the meaning of this term. While the expression has been used somewhat vaguely in pedagogical literature, I think it is generally assumed to imply the two following notions: first, that mental power can be developed by mental exercises irrespective of the knowledge that is obtained; and, secondly, that the power that is generated by means of these mental gymnastics may be used in any other sphere of intellectual labor. Now, as to the first point, since all mental states are conditioned by brain states, it seems to be evident that any increase of mental power that can be produced by discipline, will be due to the greater effectiveness of the brain and nervous system. That there is the possibility of development in this direction appears to be an established fact. Neurologists tell us that the brain and nervous system contain probably 3,000 million cells.¹ While the number of these is not increased after birth, investigations have shown that there is a development of the fibres up to 33 years of age; for a considerable part of the cells remain mere developed granules, apparently of no value to the individual, simply the latent possibilities of unrealized power. In this connection Professor Donaldson says: "For the cells continually appearing in the developing cortex no other source is known than the nuclei or granules found there in its earliest stages. These elements are metamorphosed neuroblasts which have shrunk to a volume less than that which they had at first, and which remain small until, in the subsequent process of enlargement necessary for their full development, they expand into well-marked cells. Elements intermediate between these granules and the fully developed cells are always found, even in mature brains, and, therefore, it is inferred that the latter are derived from the former. The appearances there also lead to the conclusions that many elements stop short of complete development, that the number of elements which might possibly develop in any given case is far beyond the number that actually does so, and that the characteristic appearance of the cortex in the various localities depends in a measure on the expansion of dissimilar layers of the primitive granules."²

If, then, mental exercises aid the development of the brain, formal education must, to some extent at least, be a fact. Just what effect study has upon brain development has not yet been fully established, but there are indications that it assists this process. Laura Bridgman's case³ is cited as an instance of this. In the examination of her brain, Professor Donaldson found "that those parts of the cortex which, according to the current view, were to be associated with the defective sense-organs, were also particularly thin. The cause of this thinness was found to be due, at least in part, to the small size of the nerve cells there present. Not only were the large and medium-sized nerve cells smaller, but the impression made on the observer was that they were also less numerous than in the normal cortex." Apart from

¹ Donaldson: *The Growth of the Brain*, p. 159.

² Donaldson: *The Growth of the Brain*, p. 238.

³ Reported by Donaldson in *Am. Jour. of Psychology*, Vol. III, No. 3; Vol. IV, Nos. 2 and 4. Cf. Hallett: *Education of the Central Nervous System*, p. 46.

this evidence, it can hardly be doubted that the exercise of the brain, and the increased flow of blood which it causes, will aid in the development of the cells and of their connections with other brain centers, just as physical exercises have a like beneficial effect upon the other parts of the physical system.

It may, therefore, be safely concluded that mental exercises assist in the development of brain power. How far this is of service in other kinds of work than that in which it was produced, is of course another question. It would appear not to be of such general application as to warrant the supposition that this stored-up energy can be expended in any form of mental activity.¹ The development of the brain centers for the various senses would evidently be of service only for the production of sense images belonging to the senses with which they are concerned and the corresponding motor reactions. Further, the separate development of the main divisions of the central nervous system, the afferent fibres, the central connections, and the motor nerves, would evidently produce very different psychical results. The growth of the associative fibres, upon which doubtless the association of ideas depends, must lead to the development of the intellectual type of character, which, in extreme cases, gives us men in whom "the native hue of resolution is sicklied over with the pale cast of thought." The over-cultivation of the sensory portion of the system on the other hand might lead to a life of sensuality, while the development of the motor regions would give us men of action.² Hence an all-round education of the central nervous system cannot be secured from any circumscribed series of exercises. At the same time it seems probable that the increased development of any part of the system must prove beneficial to the whole, especially in the development of associative fires, which bring all parts of the system into connection and therefore increase its effectiveness.

It seems, then, that formal education is to some extent a reality, according to the teachings of physiological psychology, both in the permanence of the acquisition derived from studies apart from their knowledge value, and also in the general application of this increased power for other forms of mental activity. Intellectual training stands on very much the same basis as physical training. A man's physical nature can be trained by doing useful work or the exercises of the gymnasium, which have no value whatever except their effect upon the physical system of the performer. So one's brain system can be trained in studies that have a knowledge value for the individual, but also in those that have none. In both cases, of course, it is best that the gymnastics should be secured in the performance of useful work, as in this case two ends are gained at the same time; but as, perhaps, all kinds of work only partially develop one's physical powers, so that it is necessary to have recourse to gymnastics to complete the physical training, in the same way it may be necessary to have special exercises to develop particular brain functions, though such exercises have no knowledge value in themselves. In fact, it may be found that many physical exercises that usually are not classed as mental training, have no less value for the training of the mind than the study of the classics or the sciences, that manual labor, foot-ball, and other forms of athletics are just as potent factors in intellectual development as many subjects of the curriculum; as they not only train the muscular system, but also the brain cells by which the muscles are controlled.

While, therefore, physiological psychology does not appear to justify the conclusion that formal education is either a "myth" or a "fic-

¹ Cf. Hinsdale: *The dogma of formal discipline*. *Educational Review*, Sept., 1894.

² Cf. Donaldson: *The Growth of the Brain*, p. 342.

tion," the writer of this paper does not wish to place himself on record as advocating exclusive attention to formal studies, without regard to their knowledge value. On the other hand he is utterly opposed to such a procedure, and believes that the disciplinary value of studies should be sought, as far as possible, in those that have a value on account of their content. At the same time we should not close our eyes to the two-fold value of all instruction through our allegiance to an antiquated form of psychology that denies such a possibility. While we must ever be grateful for the immense contribution that Herbart and his followers have made to modern pedagogy, it is surely much better for us to translate those fruitful principles, such as apperception, which they have taught into terms of our modern psychology, which is capable of doing justice not only to them but also to many others of which Herbartianism, on account of its manifest limitations, can take no cognizance.

LITERATURE.

The Case of Wagner. By FRIEDRICH NEITZSCHE. Tr. by Thomas Common. Introduction by Alexander Tille. New York; Macmillan and Co., 1896.

Thus Spake Zarathustra. By FRIEDRICH NEITZSCHE. Tr. by Alexander Tille. New York; The Macmillan Company, 1896.

A Genealogy of Morals. By FRIEDRICH NEITZSCHE. Tr. by William H. Hausemann. Introduction by Alexander Tille. New York; The Macmillan Company, 1897.

These three volumes are respectively Vols. XI, VIII, and X of The Macmillan Company's English edition of the complete works of Friedrich Nietzsche, to be issued in eleven volumes. The editor is Alexander Tille, Ph. D., Lecturer at the University of Glasgow. The text is that of the final German edition (Leipzig: E. G. Naumann).

There is no more interesting figure in modern philosophy than Nietzsche. Whether viewed as a prophet or as mountebank he commands attention. The enormous influence of his works, not only in Germany, but also in Austria, Holland, France, Scandinavia, and Russia, and the rapidly growing literature which is interpreting and developing his thought, indicates his power over those who deem him a prophet; while Max Nordau's eighty-five pages of unsympathetic, not to say scurrilous, criticism are equally convincing of his ability to arouse opposition and contempt. It is, therefore, a matter of congratulation that his works are being worthily presented to the English-speaking world.

As the man is not less interesting than his writings, and as little known, a word about his life is demanded.

He boasts of gentle ancestry — les Neitzki — a noble Polish family, certain members of which found it advisable to leave their native land, about two hundred years ago on account of participation in some political intrigue. They settled in Germany and one of their descendants with a germanised name (Nietzsche), a protestant pastor in a small village in Saxony, was the father of the philosopher. The latter was born in 1844, October fifteenth. He early showed a "rich but contradictory nature." He was gifted with delicacy of perception and fine sensibility, but had a violent will. A passion for poetry and music and a taste for dialectics and analysis marked him very early. "In him were the savant, the artist and the philosopher;" but the three characters never consented to live on terms of peace.

Nietzsche was educated in the famous Schulpforta and at the Universities of Bonn and Leipzig. He was "destined" for the ministry, but his intentions melted like wax under the influence of Schopenhauer whom he read during the first year of his university life. He turned his attention to philology, bringing to his study of Greek literature immense enthusiasm and a sympathetic intelligence.

In 1868, before taking his degree, he was called to the chair of classical philology in the University of Bâle. He was then twenty-four years old. Here he remained until compelled, by ill-health, to resign his position in 1879. "Two hundred days in the year," he says, "were pure pain." He by no means, however, "ceased from his labors:" a

new book appeared nearly every year until 1888, when he became hopelessly insane. Since then he has lived a merely vegetative life, cared for by relatives.

As already indicated Nietzsche's first great teacher was Schopenhauer. Wagner was the second. Under the spell of these two masters, he produced, in 1871, his first important work, "Die Geburt der Tragödie." Schopenhauer and Wagner are used to solve the problem of the origin of tragedy. It is the combined product of Dionysius, genius of creation and of destruction, source of intoxication and of music,—the "will-to-live"—and Apollo, genius of beautiful personality, source of poetry—the art instinct.

The essential pleasure of the tragedy consists in contemplation, at once, of the grandeur of the individual life and the might of universal life which swallows up, after having created, the individual life.

Nietzsche did not, however, remain long a disciple of Schopenhauer and Wagner. Though nominally the apostasy did not take place until late in his career, it is evident that he had cut loose from them much earlier. As early as 1877, he had begun to discover that both Schopenhauer and Wagner were antipodal to him: "they both deny life." He confesses to a long combat with himself against Wagner and Schopenhauer—diseases against which he had to defend himself. Henceforth he occupies a position quite independent of them. And he opposes them with scorn and bitterness. Not asceticism, denial of life, which is the essence of Schopenhauerism and Wagnerism; but affirmation of the will, the instinct, to live is his thesis. It is worthy of notice that this final phase of Nietzsche's philosophy is coincident with his physical decline. With the waning strength and weakening hold the upon life comes his passionate and, attimes, incoherent affirmation of life and power. He becomes a kind of modern Lucifer storming the battlements of heaven—but single-handed and with weapons that merely bruise his own hands.

Nevertheless there is a dominant idea in all of Nietzsche's later writings: it is that of morality. He has purged his philosophy of ontological and epistemological impedimenta—they are but the outworn trappings of defunct systems—and views the universe solely as a moral problem. But there is little of what we are accustomed to think of as morality to be found in his moral philosophy. All things are to be tried by the standard of physiology—art, culture, religion—everything.

Ideal standards, which are as vague as variable, must be thrown down and the immutable standard of physiology must be set up universally. Whatever tends to physiological *décadence* is immoral: whatever tends to physiological ascent is moral. Thus history and present experience are to be tested.

It is easy to see that such a standard is in apparent opposition to the standard of utilitarianism. "The greatest good of the greatest number" does not harmonize with the unbridled sway of natural selection. Prof. Huxley's ethical code demands the combatting of the cosmic process as the condition of social progress, which consists in "the fitting of as many as possible to survive." And this not far from being the creed of ethics and sociology throughout Christendom.

The old idea of a "moral order of peace" has necessarily perished before the blighting breath of modern evolutionism. Progress results not from passive development, but from a fiercely competitive struggle. In view of this concept, it was inevitable that the question should be raised: What becomes of our concept of morality with its altruistic, good-of-the-many, pity-for-the-weak bias? Is man really outside and above the cosmic order, wherein reckless indifference to the good-of-the-many runs riot? Is the good-of-the-many, after all, the object

of moral solicitude? or is it not rather the preservation of the well-constituted to the end that the species may reach its consummation in a stronger, bolder, freer, finer, more halcyonic life? Not *humanity* but the "*uebermensch*," as the end of the cosmic process! It was inevitable that the question should be asked.

It is cause for congratulation that the question should have been formulated and an answer attempted by so subtle and powerful an intellect as that of Friedrich Nietzsche. For he states the question with uncompromising—nay brutal—frankness, and with a clearness that leaves no one in doubt as to the real issue. Others have approached the problem only to shrink back in confusion or to venture timid and apologetic suggestions; but Nietzsche has shouted defiance to the whole altruistic, good-of-the-many, *Christain* morality, and proclaims, in a paean of victory, that morality is dead—"good and evil" are superstitions—there is no "good" but power—the will-to-live and the will-to-power; and no bad but weakness, devitalization and weariness of life.

This is the germ of his philosophy and one will look in vain through all his voluminous works for an idea which is not rooted in this fundamental concept. Everywhere it is exploited with wealth of learning, penetrating insight, rhetorical splendor, immense breadth of view and passionate enthusiasm.

Whatever may be the value of this contribution in the solution of the ethical problem, the apologists of the conventional ethic cannot complain that the opposite position has not been presented with incomparable clearness, sincerity and force.

The three books before us present varying phases of this germinal idea.

The *Case of Wagner* consists of four distinct parts: The Case of Wagner; Nietzsche contra Wagner (being passages selected from the author's older writing to show that "Richard Wagner and myself are antipodes"); The Twilight of the Idols (a collection of satirical pieces); and The Antichrist. (This last is the first of a series of four essays, which were to constitute his masterpiece, *Der Wille zur Macht. Versuch einer Umwerthung aller Werthe*. The other three were never written.)

In the first two essays he deals summarily with Wagner as the apostle of fatigue, denial of life, Nihilism, in the field of art. Just as he conceives Euripides as the last *gasp* of the old, rich, puissant Hellenism, so he conceives Wagner as the consummation of the terrible disease of modernism. Schopenhauer is comparatively harmless; the subtle poison of his Nihilistic philosophy enters the veins only of the elect few. But Wagner, the artist of unparalleled subtlety, force and persuasiveness, is a far-reaching and deadly disease. The consummation of his corruption is reached in Parsifal, in which the ascetic ideal finds its perfect and most dangerously persuasive representation.

In these essays the changes are rung upon *decadence* with "damnable iteration." (It is not difficult to perceive where Nordau *may* have got his idea of "degeneration" in art.)

The essay, Antichrist, is an attempt at an evaluation of Christianity. Needless to say that the author considers it the most deadly blight that ever has fallen upon the race—"the one immortal blemish of mankind." Why? Because of renunciation and pity.

"The weak and ill-constituted shall perish: first principle of *our* charity. And people shall help them to do so.

"What is more injurious than any crime?—Practical sympathy for all the ill-constituted and weak:—Christianity."

Thus *Spake Zarathustra* is an earlier work than the preceding. It

is an allegorical prose poem, full of satire, criticism and moral penetration, and cast in the form of brief chapters consisting of polished and biting aphorisms—"laughing, singing, dancing strophes." The only philosophic idea in this work not found in most of the others is that of eternal recurrence—apparently adopted from Brahminism. The leading motive of the poem is the *uebermensch*, "the higher intellectual and bodily development of the human race as the great goal of humanity, and the center of ethical obligations."

The last named volume, *A Genealogy of Morals*, contains, besides the three essays which constitute that work, Nietzsche's scattered poems—"that part of his poetry which he did not choose to incorporate in any of his larger writings." The three essays are respectively: "Good and Evil;" "Good and Bad;" "Guilt, Bad Conscience," and the like; What do Ascetic Ideals mean? The first essay is "devoted to the two mutually exclusive antitheses, 'Good and Evil' and 'Good and Bad.'" These two valuations, he holds, are quite distinct in origin; the former representing the moral estimate of the strong, the well-constituted, the masterful, the noble; the latter, that of the weak, the ill-constituted, the servile. "Master-morality" and "slave morality!" The three articles in the creed of "master-morality" are: Good—"all that increases the feeling of power, will-to-power, power itself in man;" evil—"all that proceeds from weakness;" happiness—"the feeling that power increases, that a resistance is overcome." Reversely, the "slave-morality:" poverty, humility, dependence are good; pride, strength, will-to-power and joy-in-power are bad; happiness is nirvana. "Master-morality" is born of overflowing vitality, the vehemence and integrity of the race preservative instincts; "slave morality" is born of weakness, weariness of life, resentment—against the fortunate and against life itself. The moral history of the world is the history of these two antipathetical valuations.

The origin of "bad conscience" is discussed in the second essay in the series. "Bad conscience" came when man was subjected to "that most radical of all changes" he has ever experienced—"the change which he experienced when he found himself forever locked within the ban of society and peace." Instinct could no longer be his guide; he must depend upon reason,—his "meanest and least reliable organ." All his instincts, thus prevented from immediate externalization in conduct, are "turned against himself." "Enmity, cruelty, the pleasures of persecution, of surprise, of change, of destruction—imagine all these turning against the owners of such instincts; *this* is the origin of "bad conscience." Like a caged beast he lacerated himself. This morbidity of self-torture is the most dangerous disease to which man has been subjected. Out of it proceeds the concept of sin with all its dismal and paralyzing consequences.

The third essay is an attempt to evaluate ascetic ideals. "The ascetic ideals are identical with the ideals of the slave-morality"—poverty, humility, chastity. Economic ruin and disappearance of life is their inevitable consequence.

Appraisal of Nietzsche's moral theories is premature. They cannot be brushed aside as the ravings of a madman. Nietzsche was no madman when these theories took shape in his mind. And, besides, there are too many moralists of guaranteed sanity who profess a leaning towards the practical desirability of such a standard as he proclaims. (*E. g.* F. H. Bradley.)

But it is competent to point out that Nietzsche is about as unscientific as possible. Witness the following from the *Foreword to A Genealogy of Morals*: "But with the same necessity with which a tree will bear its fruits, our thoughts will grow from out ourselves." A fine and im-

perative declaration of faith for the artist—but for the philosopher? and for the *scientific* historian of morals? How far is such thinking removed from “the intellectual cobweb-spinning in the mode of Spinoza and Hegel?”

Again, his assumption that sympathy is not only a symptom of decadence, but also its most efficient cause, is by no means a closed question as yet. Science has yet to make her report upon the matter. And would the followers of Nietzsche hold that the race is on the brink of destruction because medical science has reclaimed *him* from the mad-house and restored him—a helpless wreck—to the sister who ministers to him in self-effacing sympathy? And are they ready to condemn the world for pitying instead of destroying this “weak and ill-constituted” one? And, after all, sympathy is just as much an instinct as cruelty or lust. Nietzsche has no right to exclude it from his pantheon of the “unconscious.”

Such examples might be multiplied *ad infinitum*, but they would be idle. Nietzsche must be judged by his intentions, not by his scientific attainments.

W. S. S.

La Pubertà studiata nell' uomo e nella donna in rapporto all' antropologia, alla psichiatria, alla pedagogia ed alla sociologia. Dal Dottor ANTONIO MARRO, Torino, 1897. XI, 507 pp. 8 vo.

Dr. Marro is Docent in Psychiatry at the University of Turin, and his earlier (1887) work on the “Characters of Delinquents” marked him out as one of the ablest and most conscientious of the Italian criminologists. The present volume (announced in 1895) has appeared serially in the *Annali di Freniatria*, of which Dr. Marro is editor, and is, altogether, the most careful and ambitious treatment of the subject of puberty in man and in women we possess as yet, occupying a position quite apart from such recent treatises as those of Biérent and others, which are neither the result of so extensive personal investigations, nor are marked by such wide reading and critical appreciation of data of all sorts and all values.

The author recognizes in the development and extension of the pubertal crisis and pubertal phenomena, three periods, *viz.*, (1) Preparatory period, (2) Period of accelerated growth, (3) Period of completion.

The first period is marked by an arrest of growth in stature, as if nature wished to gather her strength for the period to follow; by the first hint of the greater development of the genital organs (internal and external), the first appearance of hair on the pubic region; by a certain improvement of the higher psychic qualities (attention, reflexion, judgment, etc.); and by an improvement of conduct as compared with preceding years in the social relations of the youth.

The second period is one of accelerated growth in which stature and vital capacity develop most rapidly, and the sexual (physical) characteristics become apparent—a most critical epoch, when it is possible for the organic and functional integrity of the individual to be more or less seriously compromised. The rapid increase in stature, weight, etc., seems to bring about a temporary weakening of the powers of resistance in the physical and moral powers of the adolescent—exaggerated activity of growth apparently entails arrest of functional perfection. So this period comes to be characterized by a species of psychic weakness manifesting itself in instability and impropriety of conduct, and, generally, the time of the development of puberty is the period at which the individual presents less power of physical resistance (chlorosis and nervous troubles in women; diseases of the respiratory and digestive tracts in men have a special predilection for

this period, and are marked by a greater morbidity); this functional deficiency of the adolescent is the natural result of the exaggerated proportion in the organism of young, imperfect elements during the unusual increase in growth of the skeleton and of the essential and secondary sexual organs. The psychic state which marks this period may be characterized in one word as the "unforeseen"—from the sphere of the unconscious the individual receives impulses to action, which reflexion and judgment have not yet acquired the power to dominate and to regulate; hence many inadvised actions which stand out in contrast with the habits and previously indicated character of the youth and cannot be held to designate his future nature and destiny.

It is only in the third pubertal period that the character of youths takes on permanence, definite form, and consistency, and the work of differentiating the individual from other individuals matures, and nature, having accomplished the task of assimilating the greatest amount of material, now proceeds to elaborate and to specialize—and a new being is born, with new passions, new feelings, new ideals. There is no genius that does not at this age shed forth some ray of its future splendor—the individual issues from this period transformed, the chrysalis becomes the butterfly. To woman come elegance and regularity of form, roundness of limbs, beauty of face and voice; apprehension loses itself in repose, and the consciousness of her mission in the world dawns upon her, as well as the full appreciation of her charms and beauty and their significance to men; now everything awakens and all is animation, the eyes acquire a splendor of expression, movements become graceful and charming—freshness, nerve, and vivacity touch everything.

To the man come calm and consistency, individuality and lasting transformation—the new passions and activities of emulation, love of praise, pride of self-distinction, care for the regard and favor of the other sex, zeal for pleasures. With the feeling of independence and the perfecting of individualization is developed in the youth at the same time the faculty of extrinsecrating their values—altruism, the tendency to sacrifice himself for a person or an idea, do not arise in him until the pubertal development has appeared.

In twenty chapters the author discusses, with ample illustration of cases and of data: The pubertal epoch, physiological changes, sexual differences in character, periods of the pubertal crisis, pubertal epoch in degenerates, nervous and mental disturbances at puberty, psychoses of puberty, effects of puberty and of anomalies of the genital organs, physiological conditions of degenerative manifestations, causes of degeneration, effects of age of parents on their children, factors of degeneration, physical hygiene of youth, hygiene of intelligence, moral hygiene, the struggle against degenerative manifestations and the prophylaxis of degeneration, therapy of the degenerative manifestations of the pubertal epoch, woman's character and mission in the world, sexual and social hygiene. Nowhere else can be found so full and fair a treatment of all these questions, and of many others more or less related to pubertal topics.

Among the many interesting *dicta* and remarks of general character in the volume the following may be noted: The instinct of sensuality precedes the true amorous sexual tendency; the brute long prevails before the man; lubricity tickles the senses before love wakes (p. 86). In infancy and childhood, as a rule, in both sexes the forms of mental alteration observed are arrests of development (p. 100). With the female sex this perturbation of the pubertal epoch continues during all their sexual activity (p. 205). Seminal

losses occur normally in all youths, especially during sleep, and mark the arrival of sexual activity (p. 207). Adolescents (youths), are, as a rule, fantastic, little given to reflexion, greedy for pleasures and diversions, intolerant of discipline, averse to fixed occupation, little suited to fatigue (p. 217). The notorious general predilection of women for soldiers can be explained only as an atavistic residuum of the preference accorded to the victor in the struggle for love (p. 221). Precocious love develops an equally precocious instinct of cruelty; with the first sexual embraces this instinct of cruelty breaks forth (p. 223). In woman the tendency to attract the attention of the man, has taken the place of impulsion; in her the exterior mechanism of amorous emotion is coquetry, in man aggressiveness (p. 228). The prime predisposing conditions of crime are closely related to the natural condition of the youth (p. 244). At the time of puberty the most common poisoning to which youths are exposed is alcoholism (p. 265).

Hunger, cold, excessive labor, improper *milieu*, physical and moral abjection constitute the factors of the complex state termed poverty (*miseria*) (p. 270). Mental fatigue is relative to persons and habits (p. 276). The emotion of anger is not as dangerous in youth as at other times of life (p. 279). The first hygienic cure for youth has to do with alimentation (p. 294). After alimentation look to respiration (p. 296). Obscene books, talk, pictures, spectacles, plays, should be forbidden to the young (p. 299). The meeting of the sexes during work-hours, no less than during study-hours, is desirable: their separation is favorable to the development of anti-natural tendencies and antagonistic to the best normal moral development of both girls and boys, physically and intellectually (p. 301). During the pubertal period all excessive labor ought to be avoided (p. 303). Rich and poor, high and low, all feel the influence of the pubertal crisis with its exigencies; for all there is needed a sort of rest that shall permit the youth to equilibrate himself well, to proceed afterwards with greater freedom upon to the path marked out for him (p. 306). The first benefit of gymnastic games, which represent the healthiest and most educative diversion, is to put the young in contact with each other (p. 307). From the point of view of physical hygiene and from that of morals also, we can look with favor on the gain that the bicycle is making at the expense of the dance; and upon the time that each of them subtracts from idleness and novel-reading (p. 313). The action of swimming upon the muscular system is paralleled by that of no other gymnastic exercise—scarcely a muscle remains inert (p. 314). Swimming is the one exercise in which women succeed in ridding themselves the most of the inconvenience of clothes, etc. (p. 317). Solitude and taciturnity are, as a rule, harmful to youth; whims, anomalies of character, immoral and anti-social tendencies can find no more propitious ground for cultivation and protection (p. 318). Continued, sustained labor is the characteristic of civilized man (p. 354). Where sympathy is in woman activity is in man (p. 358). Play is a form of work not less pleasing to barbarians than to degenerates (p. 361). Youth needs to be habituated to struggle, the essential condition of life (p. 370). In puberty we have the keenest and the most potent stimulus for the development of social virtues—until the rise of sexual instinct, the birth of inclination for the other sex, there is no potent stimulus, save egoism, to guide his actions (p. 376). The first condition for the development of a high moral level is an exact notion of one's own duties and rights (p. 377).

In the actions of the most sensible and honestest man criminal and

lunatic tendencies do not fail at times to make a little headway—*quandoque dormitat bonus Homerus*. Seven times a day the wise man falls, and falls no less against society than against himself (p. 386). Temperance societies are real crusades against the extension of degeneracy (p. 388). The facts by which one is to judge of the reformation of youth are disciplinability, sociability, activity, character (p. 405). The appearance of moral pain, like that of physical pain, marks the first manifestation of a dissolutive process which threatens the organization, of a dissolutive movement in the psychic organism, which, equally with physical pain, may compromise life in general (p. 410). Whilst in woman the fear-psychoses continue to maintain themselves in about the same proportion during all the epochs of her life, almost the totality of them manifest themselves in man in childhood and during the first periods of puberty (p. 424). What distinguishes precisely the civilized man from the savage is the richness of cerebral reflexes called forth by the external impressions, whence his intellectual life comes to be increased at the expense of his emotional life, with profit to the individual, who is more subject to exhaustion from emotional than from intellectual labor, and to the benefit of society, which from the cerebral labor of individuals gains the first condition of its stability (p. 426). Work is a good disciplinarian—quarrels among boys who are busy are far less frequent than among those who are left idle (p. 428). The secret of a good education lies in favoring the development of the various reflexes in an orderly manner, without allowing the ones to prevail too much over the others, but calling all regularly into action (p. 431). Fear is only the sudden and abrupt appearing of pain symptoms (p. 434). The first benefit of the religious sentiment is the auto-suggestion of faith (p. 435). A good part of the phrenoses of the age of puberty are due to conditions of exhaustion, to excess of mental or physical labor, and to uranism (p. 440). Work is the first means of moral therapeutics (p. 447). The atavistic tendency to inertia, the aversion for sustained labor, which, in man, generates idleness, vagabondage, mendicancy, and gambling, reveals itself in woman in prostitution better than elsewhere (p. 455). The woman who renounces maternity to remain simply the lover is like the man who stops at mere preservation without production of useful labor (p. 456). Prostitution is the great anti-social crime of woman (p. 456). There is no doubt that from degenerate individuals are born not only healthy or practically healthy children, but even geniuses (p. 499). There are certainly two kinds of geniuses, the healthy and the sickly—about Franklin, Garibaldi, Lister, Pasteur, Washington, there are no marks of degeneration, they could fall ill like ordinary persons—these beneficent geniuses are the providence of nations (p. 500).

Marro's book has a strongly sociological trend, and the author is in sympathy with all rational efforts to combat the elements of degeneracy in the world. It is the duty of every individual member of society to produce normally more than he consumes, so as not to become in any way a burden or a parasite upon his fellows; every work performed in the world ought to satisfy two requisites, benefit the individual executing it and also the society in which he is included; criminality consists in producing works that advantage the individual but injure society, and the damage which the latter suffers is the measure of increase of the gravity of the offense. In modern society there exist certain professions which, in their very nature, are essentially criminal, and criminality invades even the honest professions. Marro has little good to say of politics. Politics is essentially a dishonest, immoral profession, consisting in reaping advantage from all that can

profit the opinion, or party, one is desirous of sustaining, and from all that can injure the other side. Every political party that seeks to injure another except in self-defence is essentially criminal. Politics is especially dangerous to young men, wrecking their moral character and shattering the *ensemble* of their social righteousness. Gambling, whether carried on at the stock exchange or the gaming-table, is equally criminal—the gambler is one with the thief in advantaging himself at the expense of others, without adding at all to the social patrimony. Multiplication of sects, religious and political societies, reaches often an absurd, if not a criminal limit; anarchy, unproductive claustration, etc., can soon become criminal, as they begin by being anti-social.

There is no clear line of separation between normals and degenerates; there are no clear characteristics of demarcation between the honest and the delinquents, the sane and the insane—the hereditary defects, which give place to degenerative manifestations in the children are found among the normal as well as among the abnormal; there is only a difference of gradation, as, in the degenerative manifestations themselves, there is likewise a simple difference of degree. In society there are no classes, nor even families in which, sooner or later, degenerative tendencies do not manifest themselves; but the presence of degenerative characteristics does not necessarily imply alteration of function, nor does it necessarily imply delinquency or lunacy, but simple disposition. The natural law of the correlation of organs with functions makes it necessary that these degenerative signs should always have a value, but the norm and the determination of this value depends upon the concurrence of other considerations: "The *torus palatinus*, long arms, powerful hands, do not of themselves serve to distinguish the delinquent from the normal man, since they are found with notable frequency in normal individuals. But such signs may characterize the energetic criminal, which brings to the perpetration of his offences uncommon vigor, perseverance and methods, and distinguish him from the weak criminal in whom we find rather microcephaly, assymetry, deformity and other characters indicating weakness or disease rather than energy or prepotency of action (p.382)." In the whole population, however, degenerative manifestations are rather rare and scattered everywhere. It is the business of society to prevent the tendency from becoming a powerful factor positive in its criminal influence, and to prevent the propagation by suggestion, contact with criminals and degenerates, theaters, novels, pictures, newspapers, etc., of criminal and degenerative elements in portions of society where the tendencies to evil have long remained in innocuous desuetude.

A. F. CHAMBERLAIN.

WARD, LESTER F. *Outlines of Sociology*. The MacMillan Company, New York, 1898.

Under this title Prof. Ward has republished the series of articles which has been appearing in the American Journal of Sociology since July, 1895. The first half of the work, entitled "Social Philosophy," treats mainly of the relations of sociology to its cognate sciences, cosmology, biology and anthropology. The ideas here expressed are amplifications of scattered thoughts found here and there in Prof. Ward's previous writings. The aim of the first part of the book is, in the language of the author, to serve "as the frame and setting of a pen sketch embodied in Part II." These early chapters are intended as well "to show what sociology is not."

The constructive portion of the book, "Social Science," contains a

philosophic recast of the author's sociological system. With the exception of a few illustrations, the entire subject matter is found in "Dynamic Sociology" and "Psychic Factors in Civilization." It consists quite largely of quotations from these works. The aim of the author in writing was to furnish "clear explanations and definite delimitations of the field." What he has succeeded in doing has been to furnish an admirable introduction to his own system of sociology. The work shows little familiarity or sympathy with recent publications dealing with the same general line of thought. Spencer and Kidd are the only writers on social topics referred to at any length, although there are incidental references to Patten and Vincent. To those acquainted with the value and originality of Prof. Ward's contributions to the theory of society, this book must prove something of a disappointment.

H. D. S.

HINSDALE, B. A. *Horace Mann and the Common School Revival in the United States*. The Great Educator Series. Edited by Nicholas Murray Butler. Charles Scribner's Sons. New York, 1898.

Prof. Hinsdale devotes the first seventy-five pages of the book to an introductory sketch of American educational conditions and reformers previous to 1837. While Boone and Martin cover somewhat the same ground, the summary before us is on the whole much more satisfactory. It is free from verbiage, and the relation of events is easily followed. Two chapters, the third and tenth, are given to the Non-educational Activities of Mann. The larger portion of the work, chapters IV to X, deals with the common-school revival in Massachusetts. The different phases of this great movement are presented with admirable clearness and impartiality. Prof. Hinsdale, while not lacking in sympathy, has avoided that common vice of biographers—hero worship, in his discussion of the controversy with the Boston School masters. His digest of Mann's twelve reports as secretary of the Board of Education fills a long felt want. Perhaps the ablest and most readable chapter is that devoted to "Horace Mann's Character and Work." While recognizing the simple greatness of the man, it is entirely free from rhetoric or exaggeration.

The discussion of the common-school revival in the other States is brief, vague and unsatisfactory. It gives the impression that the only important impetus toward common-school reconstruction came from New England and does injustice to early movements in New York, Pennsylvania and Ohio. It may be worth noting that strong progressive legislation in New York antedated that of Massachusetts by twenty years; while the fight for common schools in Pennsylvania was won three years before the appointment of Horace Mann.

While the book is not and makes no pretence of being a great biography, it is a valuable contribution to the scanty literature of American educational history, and is up to the high standard hitherto maintained by the biographies of this series. For the average reader in this field, no more valuable book has been published.

University of Iowa, Studies in Psychology: Edited by GEORGE T. W. PATRICK, PH. D., and J. ALLEN GILBERT, PH. D., Vol. I, pp. 92. University of Iowa, Iowa City, 1897.

These studies are reports of careful scientific researches, and contain contributions both direct and indirect to pedagogy. The first and longest paper is on researches upon school children and college students by Dr. Gilbert. Experiments have been made extending over the greater part of two academic years, and the subjects were school children from the ages of six to nineteen. Each individual was tested

in respect to pulse, pain threshold, strength of lift with the wrist, strength of lift with the arms, estimation of length by arm movement, estimation of length with the eye, lung capacity, weight, height, voluntary motor ability, fatigue. The data obtained were carefully studied and showed marked changes in the development of the child about the age at which change of growth occurs. The most marked effect being at about fourteen. "Mean variations remain comparatively regular for the two sexes until about the age of fourteen, and the change in variation is largely due to the change in growth coming at that year. Girls seem to complete largely their development a year or two previous to the time at which boys have just begun their most rapid period of development. In the pain threshold, arm lift, wrist lift, and lung capacity the girls have about reached their maximum at about fourteen, while at this age the boys begin to develop most rapidly; so that judging from the present series of tests compared with those taken at New Haven (in an earlier study by the same investigator) the statement might almost be risked that a girl has largely completed her physical development before the age of fourteen or fifteen."

Dr. Gilbert finds no such relation between weight and height and mental ability as has been claimed. On this point his results are negative, although if anything, they indicate that the taller and heavier the children, the duller they are instead of the opposite.

Other papers concern interesting studies on the effects of loss of sleep, and the effects of practice in reaction and discrimination. The former by Drs. Patrick and Gilbert, reports the results of physiological and psychological tests on three subjects during a period of abstinence from sleep lasting for 90 hours and is a very important contribution. Reviews of the experiments of Friedrich and Ebbinghaus on fatigue in school children, and on recent literature concerning right-handedness and left-handedness, complete the volume.

W. H. B.

The Great Ralston Health Club. Organized by EVERETT RALSTON. Published by the Martyn College Press Association, Washington, D. C., pp. 174.

We have turned over this and several more and larger volumes of this mystic order with growing mystification. The association claims millions of members in the United States, and is devoted to strength, longevity, cheerfulness, pure food and drink. It is a secret order, and sells many books to members at exorbitant prices. Statements about health are sought of each applicant for membership, and it cultivates "glame," a word invented to designate the mystic principle of life found by the eponymic founder in different proportions in different food. It is always printed in large capital letters; the school has a private laboratory of truth-seeking scientists; strives to produce a new race of men; has a creed of twelve articles; advocates Ralston baths, drinks, cooking; a Ralston physiology, anatomy, etc. Glame stirs the cells with life, rests from fatigue, gives personal magnetism, makes wheat the only perfect food, cures most diseases if not too far advanced, is found in milk, cheese, eggs, apples, nuts, fresh fish, some meats, and especially in red pepper. These constitute the chief Ralston foods, and nothing else must be eaten on Ralston day, which is the fourth day of each month. There is a lot of advice, mostly good, concerning bathing, toilet, rest and sleep; much physiology also respectable; much hygienic sermonizing and moralization, and an elaborate organization. All in all, the Ralston movement, so far as is apparent to an outsider, is a unique combination of quacking and pretense, used primarily for extracting money, and secondly, for

doing the most good, the leaders of the movement, working under evident limitation, are able to do. Who Ralston is, or was, if such a person ever existed, or even who President Webster Edgerly is, who seems to be now a guiding star, there is no intimation. The association is largely represented among the middle classes in some parts of the west, and is an interesting psychological and pedagogical phenomenon. The most utterly unscientific book is that on personal magnetism, for it revives many of the vagaries of Reichenbach and odic force, and suggests the crazy theory of "radiant neuricity," yet to "unite deep respiration with exercise No. 20 210 seconds," "fingers dead still," and the "eyelids as long as possible" may teach control. The command of magnetic influence is, as the author says, a "great study." Distinguished statesmen and their wives are patrons of or recommend Ralstonism, and other unknowns certify that, whereas, they were physical wrecks, it had made them new creatures.

Marriage Customs in Many Lands, by H. N. HUTCHINSON. D. Appleton and Co., N. Y., 1897. pp. 348.

These customs are described among twenty-four different peoples and the author has shown much diligence in collecting his material from many sources. The book is copiously illustrated and attractively bound.

Die Geschichte für Lehrerseminare, von W. HEINZE, Hanover and Berlin, 1898. pp. 280.

This history for normal schools is to be in three parts, of which this is the first. Its author is a normal principal who has specialized in history, and this volume is devoted chiefly to Greek and Roman history. Much stress is laid upon art culture and industry, and the early days of Christianity are briefly characterized, and many wood cuts of ancient monuments are appended.

MISCELLANEOUS.

We quote below a concise and very conservative statement of Professor E. B. Titchener, of Cornell, whose attainments and achievements in laboratory psychology are unsurpassed, from the current number of the *American Journal of Psychology*, upon the value of work in his department for teaching.

"Every mental process may be looked at in two ways, as existence or as function. Whether we can measure sensations, regarded as existences, has long been debated in experimental psychology; and the outcome of the debate is still to be expected. Of course a pressure sensation called forth by a 2-lb. weight is not analyzable into two pressure sensations of 1 lb. each; and the visual perception of a blood orange is not a fusion of the visual perceptions of three tangerines. The question is only whether such considerations are the alpha and omega of existential measurement. But while we may, for certain psychological ends, find it convenient to look at mental processes as existences, we *must* look at them as functions; and this, whether we are 'parallelists' or 'interactionists.' In the former case we have at least to say that the brains which now throw off these and these processes, as the correlate of their physiological functioning, are the brains that have survived in the struggle for existence; mental processes are thus at least indicative of organic function. In the latter we can find no reason for the existence of mental processes, save that they have themselves proved serviceable for organic survival in the course of evolution. The conception of mind as function is thus forced upon us. But function can be measured. If I can just see a black dot on a white ground at a distance of one foot, while my friend still just sees it a distance of three, then his brightness sensitivity is three times as great as mine. If I remember two-thirds of a mass of visual material, presented under standard conditions, and my friend remembers five-sixteenths, then our visual memories stand to each other in fidelity of reproduction as 32 to 15. If, using all my partial memories, I can recall five arguments of a given total, while my friend remembers eight, then the practical value of his memory is one and three-fifths as great as that of mine. All these cases are cases of measurements; but all are cases of the measurement of mental processes regarded as functions of the organism, not as mere existences. And it is here, in our belief, that the psychological laboratory begins without any question to be of service to the teacher. There is no doubt that we can measure mental function. The instances above given are crude and insufficiently qualified; but their principle is sound. We can measure span and fidelity of memory, quickness and accuracy of apprehension, range and direction of imagination, capacity of sustained attention; we can measure inventiveness, adaptiveness, observing power, cool-headedness, suggestibility, etc., etc. Measurements of all these functions may not have yet been made; they may not be the special functions which are of the chiefest interest just now to experimental psychologists. But such measurements can be made; and, when made, are of primary importance to the teacher."

To The PEDAGOGICAL SEMINARY.

At the twice-repeated invitation of the Editor I attempt to express in a brief letter a criticism of the discussions appearing in your pages.

It is easy to ask questions, and gather statistics from those willing to answer, but it is difficult to focus the statistics compiled from these answers upon difficulties which those in practical work are interested in solving. The disappointment of these studies in education is the deductions 1, 2, 3, etc. These are too often pointless, commonplace and useless, and sometimes false in the judgment of the workers who base their judgments upon a mass of facts, gathered through experience, analyzed and classified with great care.

For instance, a study of children's reading is made, and a thousand children, say, answer a questionnaire. A student of pedagogics analyzes these answers, and then advises the librarians. The librarian would welcome light. But on reading the thesis it appears that the librarian has analyzed a hundred children's answers, oral, to one analyzed by the student. The library records show what a thousand children draw in a day. And many principles of library education have been discovered by the librarian through direct insight into the souls of thousands of children. The student by the ready questionnaire succeeds, often, in suspecting, as hinted by his statistics, that which the librarian knows is not true; or, in his naïveté, in almost proving what the librarian-student has known to be fact for some time.

Again, the church has been educating the soul for many years. The name preacher is applied to her pedagogues. The student of pedagogy, a science developed by those called pedagogues chiefly in its application to the schools, seems to set aside the preacher, instead of including him among the pedagogues. Individual experience counts for little, and the accumulated experience of the church makes no contribution to church pedagogics. Light dawns on the questions involved in developing the soul into an experience of ambition for righteousness and of love for the great Heart of the All Father, when the answers to the questionnaire are tabulated. Humbly the preacher sits to read deductions, and lo! most of that which the statistics almost prove, he has known for some time; and many things that they suggest to the pedagogue, he knows are absolutely false.

The difficulty seems to be twofold. First. The school pedagogue assumes that the school can furnish a complete education. Lack of familiarity with the work of the library and the church makes it possible for him to believe that what seems to him logical is a possibility. I will stake my reputation on the assertion that psychology and sociology justify the existence of church, library and school as co-operating but distinct institutions, each having a special pedagogics. The school pedagogue's pointless deductions result from lack of personal contact with the institutions in which he is not himself at work. The scientific method, which is the method of the pedagogy of this day, requires thoroughness, and thoroughness dictates that the one who would be the prophet of advanced methods of work for the library or the church shall ground himself in general pedagogy, and then enter the library or the church, to understand its life, and become a specialist in library or church pedagogics.

And the second difficulty. When the pedagogue has become the library or the church pedagogue, although he has gained personal association, he has not become more than individual. He must organize a collective intelligence, and reduce his personal equation to the minimum. He must associate his own intelligence with that of twenty or more of the finest successful workers in order to give his investigations point and bring to bear upon his statistics the judgment

of many, and especially of many who have knowledge resulting from experience.

It is because the library and the church need their pedagogics developed, and because it appears as if the philosophy of education, which Clark University is doing so much to work out, will furnish the basis for determining the proper methods of education for the library and the church, that I write this statement of difficulties. I value highly the studies which Dr. G. Stanley Hall is inspiring.

Albany, N. Y., 16 March, '98.

E. M. FAIRCHILD.

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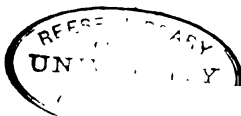
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